

MEETING ABSTRACTS

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ADMINISTRATIVE SERVICES

Completed Research

A 10-Station Multiple Mini-Interview (MMI) for Undergraduate Pharmacy Admission: Reflecting on Six Years of Experience.

Komail Nadeem, *Leslie Dan Faculty of Pharmacy, University of Toronto*, Linda D. MacKeigan, *Leslie Dan Faculty of Pharmacy, University of Toronto*, Andrea J. Cameron, *Leslie Dan Faculty of Pharmacy, University of Toronto*. **Objectives:** The Leslie Dan Faculty of Pharmacy has used the MMI since 2010, as one of the selection components for the entry-to-practice program. The following questions were asked: How did mean score change from first to second attempt, for students repeating the MMI? Did student interviewers rate more leniently than others? Did mean scores for repeated stations change? **Method:** The number of applicants repeating the MMI was recorded each year. For applicants attending the MMI for a second time, mean scores were compared for first and second attempts. MMI scores given by year-3 and year-4 pharmacy student interviewers were compared to those given by faculty/pharmacist/post-graduate interviewers. Mean scores at three stations that were repeated in different MMI sessions within the same year were compared. **Results:** 17 to 29% of interviewees each year had attended the MMI at least once before. Applicants ($n=208$) scored an average 6.0/100 points higher ($p<.0005$) on a second attempt. Student interviewers ($n=119$) scored applicants an average of 0.2/10 points lower ($p=.004$) than other interviewers ($n=162$). Mean scores for two of the repeated stations did not differ significantly, but were significantly lower at the third repeated station (5.99 vs 5.26; $p=.02$). **Implications:** Six years of MMI experience have revealed valuable findings. Applicants repeating the MMI may expect their score to increase. Student interviewers did not score applicants more leniently than others. Use of the same station in different interview sessions in the same year did not appear to advantage second session interviewees.

A Formalized Advising Process to Improve Students' Connectedness during APPEs.

Jeremy Hughes, *Pacific University Oregon*, Anita J. Clevon, *Pacific University Oregon*, Michael E. Millard, *Pacific University Oregon*, Ian C. Doyle, *Pacific University Oregon*, David Fuentes, *Pacific University Oregon*, Jackson Ross. **Objectives:** To describe the concept and implementation of an Advanced Pharmacy Practice Experience (APPE) Advisor Program designed to increase faculty involvement during students' APPE year. **Method:** Structured communication with faculty decreases when students leave campus for experiential education. Faculty serve as preceptors for some rotations, but these interactions are with small numbers of students. Literature review shows little research investigating how to increase student-faculty communication during the APPE year. A formalized program was developed in the 2014/2015 Academic Year to increase the number and quality of faculty-student interactions. This program was modified in Academic Year 2015/2016 to have faculty advisors be the primary contact. **Results:** An APPE Advisor program was implemented to guide students during their APPE year, with faculty advisors formally documenting communications and student progress. Advisors guide students

while identifying and tracking those at risk due to knowledge deficits, behavior, or life issues. APPE students with regular faculty communication increased from 9% before the program started, to 45% at block 3 and 64% at block 5 in 2014/2015. After changing the contact person to the faculty advisor in 2015/2016, APPE students with regular faculty communication increased to 68% for both blocks 3 and 5. Student referrals were compared, suggesting the program identified issues sooner. **Implications:** Using a formalized advisor program during the APPE year increases student communication with faculty, increases accountability for stated learning and practice objectives, and allows for enhanced detection of student issues, while providing additional layers of support for students, preceptors, and the experiential team.

A Process for Curricular Improvement Using the PCOA and Post-course Reviews.

Michael Rudolph, *Marshall University*, Kevin M. Rice, *Biological Sciences/Marshall University*, Glenn Anderson, *Marshall University*, Nandini D.P.K Manne, *Center for Diagnostic Nanosystems/Marshall University*, Eric R Blough, *Marshall University School of Pharmacy*. **Objectives:** To develop and implement a curricular improvement process that incorporates information from multiple data streams including the PCOA and post-course reviews. **Method:** Post-course reviews were completed for all courses in a PharmD program detailing coverage time for specific content areas/topics. Time spent in the curriculum for each PCOA content/sub-content area was calculated and compared to the school's curriculum map and PCOA blueprint. The PCOA was administered to P3 students in 2015; content/sub-content area coverage in the curriculum was used to interpret student PCOA scores. **Results:** Several gaps were identified between the curriculum map and content coverage. Analysis of time allocated to PCOA content areas indicated greater emphasis in the school's curriculum than coverage on the PCOA for social, behavioral, administrative pharmacy sciences (35.2% vs. 22.0%) and clinical sciences (43.0% vs. 32.0%). The school's coverage was much less for the basic biomedical sciences (6.4% vs. 16.0%) and pharmaceutical sciences (15.4% vs. 30.0%). Coverage of most sub-content areas followed the pattern of their corresponding content areas. Surprisingly, there did not appear to be a clear relationship between curricular coverage vs. PCOA coverage and student performance. Only for 7 of 12 content areas where students' scores were deficient was curricular coverage less than PCOA coverage. **Implications:** We have made several recommendations for each course in the curriculum to the curriculum committee. Ways to incorporate missing topics, improve content delivery, and in some cases increase coverage time for areas where student performance was deficient should be explored.

Admission Criteria as Predictors of Student Success.

Kelly M. Shields, *Ohio Northern University*, Eunhee Kim, *Ohio Northern University*, Jennifer Kline, *Ohio Northern University*, Lindsey Peters, *Ohio Northern University*. **Objectives:** Evaluate impact of various admission criteria elements (cognitive, behavioral) as predictors of first-term college GPA and on-time graduation. **Method:** Predictive models were developed to examine if the current admission criteria: high school GPA (HSGPA), ACT Composite score, interview score,

etc are significant predictors for student success defined as first-term college GPA, on-time graduation among PharmD students at a direct entry private university. The study sample consisted of 395 pharmacy students matriculated as first-time freshmen students during fall 2007 through fall 2009. **Results:** Results from the hierarchical linear regression analysis indicated that both HSGPA and ACT Composite score were significant predictors for first-term college GPA. After taking into account relevant demographic factors, the final model explained 22% of the total variance in first-term college GPA, with HSGPA accounting for 18% of the total variance and ACT Composite score accounting for only 3%. For predicting on-time graduation using the logistic regression method, HSGPA alone was the significant predictor while the model had no substantial impact on predicting on-time graduation (4% of the total variance). Further study is needed to develop a more comprehensive model involving behavioral or psychosocial factors impacting student success outcomes. **Implications:** This data was used to adjust relative weight of HSGPA and standardized tests scores in the application evaluation rubric. It is also being used to allocate student services resources for student retention initiatives.

An Instrument to Manage Faculty Workload and Improve Employee Engagement in an Interdisciplinary Department. Grant W Anderson, *University of Minnesota*, Laurie A. Fosnacht, *University of Minnesota*, Michael T. Swanoski, *University of Minnesota*. **Objectives:** The implications of successful workload monitoring and management are profound and impact employee engagement, resource management, reporting, and overall administrative effort. Tools designed to help departments manage workload are not readily available or tailored to assess the four missions (scholarship, teaching, practice and service) of departments housing interdisciplinary pharmacy faculty. **Method:** A faculty workload instrument was developed to assist departmental leadership and staff in the assignment and monitoring of teaching and service. The tool captures prospective teaching workload assignments in professional, graduate and post-graduate didactic and experiential courses and related teaching activities, course administration, and co-curricular teaching activities. A separate section of the document captures service related workload. **Results:** The document was developed and shared with all departmental faculty to facilitate an understanding of shared roles and responsibilities and was designed to improve employee engagement and increase transparency. The document further served as a template for workload discussions with individual faculty at the annual review and throughout the year, provided ready access to data requested by collegiate administration and committees, revealed gaps in teaching expertise and overall workload providing justification for new faculty hire requests, and ensured that all educational activities are covered by departmental faculty. The latter provision is important for departments on coordinate campuses with responsibility for contributing to all courses taught in a professional curriculum. **Implications:** Use of this workload management instrument is expected to increase employee engagement while simultaneously facilitating administrative oversight and strategic planning related to faculty activities across all collegiate missions.

Analysis of Pharmacy Student Motivators and Deterrents for Professional Organization Involvement. Molly J Wascher, *The Johns Hopkins Hospital*, Erin Petersen, *Ohio Northern University*. **Objectives:** To determine motivators and deterrents impacting a pharmacy student's decision to join a professional organization. The study was designed utilizing the Herzberg Motivation-Hygiene Theory to address the unique organizational needs of today's student pharmacists.

The goal of this research was to create a list of meaningful factors that organizations can use in their student membership recruitment and attainment process. **Method:** Students enrolled in one of the 8 participating pharmacy schools in the state of Ohio, Michigan, Wisconsin, Indiana, Illinois, and Kentucky were invited to complete an electronic survey. Students reported the significance of the provided motivating and hindering factors to their membership in a professional organization. A regression analysis was conducted to examine the associated of each factor and professional organization involvement. **Results:** The survey was completed by 856 students. Students reported professional development and networking as the most significant motivating factors, selected as very significant or somewhat significant by 88.0% and 87.5% respectively. Conversely, two hindrance factors were found to be significantly associated with a lack of membership, time required for involvement (78%) and cost of an organization (76%) (p-value <0.001). **Implications:** The data demonstrates the multifactorial nature of a student's decision to join a professional organization. The results suggest future student recruitment efforts should focus on opportunities for networking and professional development. Additionally, to limit significant barriers to student participation, organizations should be cognizant of their membership fees and required time commitment.

Analysis of the Validity of the Multiple Mini-Interview for Predicting Performance in a Pharmacy Program. Andrea J. Cameron, *Leslie Dan Faculty of Pharmacy, University of Toronto*, Komail Nadeem, *Leslie Dan Faculty of Pharmacy, University of Toronto*, Linda D. MacKeigan, *Leslie Dan Faculty of Pharmacy, University of Toronto*. **Objectives:** Intent: To assess the predictive validity of a 10-station Multiple Mini-Interview (MMI), in comparison to pre-pharmacy average (PPA) and Pharmacy College Admission Test (PCAT) score, with respect to annual academic performance in a 4-year entry to practice program. **Method:** Multiple regression analyses were conducted with PPA, PCAT composite score, and MMI standardized scores as predictor variables, and age and gender as control variables. Dependent variables were annual pharmacy GPA and course grades. The incremental adjusted R-squared (AdjR2) for regression models with and without the MMI, estimated the contribution of the MMI to prediction of grades. Regression models with and without PPA and PCAT were also analyzed. **Results:** The MMI significantly predicted 1 out of 7, 1 out of 10, 5 out of 10, and 1 out of 6 course grades in years 1 through 4, respectively. The incremental AdjR2 contributed by the MMI to annual GPA increased from -0.1% to 1.0% over 4 years, while the PCAT contribution decreased from 1.3% to -0.3%. PPA significantly predicted every course grade and explained the most variance in annual GPA (mean incremental AdjR2 9.8%) throughout the curriculum. **Implications:** The MMI explained more variance in grades in the latter two years of the curriculum than in the first two years, suggesting the MMI is a better predictor when courses are more clinically-oriented. The opposite was true for the PCAT. The ability of the MMI to predict licensing exam scores is currently being studied.

Assessment of Faculty, Staff and Student Wellness at a College of Pharmacy. Elizabeth Ackerman, *University of Hawaii at Hilo*, Deborah Taira, *University of Hawaii at Hilo*, Carolyn SJ Ma, *University of Hawaii at Hilo*. **Objectives:** 1) To examine how College of Pharmacy faculty, staff and students incorporate wellness-related behaviors, which we emphasize in the classroom and clinical setting, into our own lives; 2) To collect input on desirable components of a college-sponsored wellness program. **Method:** A 25 question survey with

wellness-related behavioral questions was sent electronically to all faculty, staff and students at the beginning of the 2016 spring semester. **Results:** A total of 196 surveys were completed (50% response rate). In the 7 days preceding the survey, 60% and 73% of participants engaged in vigorous and moderate physical activity, respectively. In the same time period, 51% engaged in muscle strengthening exercises. Regarding nutrition, 36% reported that they ate breakfast every day of the week while 69% reported dining out at a restaurant at least one time per week. The majority of respondents do not track their physical activity (68%) or nutrition (82%) with a homemade log or electronic app. For our qualitative questions on wellness program ideas, popular suggestions included: increased availability of healthy meal options on campus (i.e. healthy food truck, healthy vending machine options); e-mail distribution of inexpensive, healthy recipes; and implementation of mental health related programs (i.e. dealing with anxiety, time management, yoga classes). Participants indicated “mini challenges”, “increased faculty/staff/student interactions” and “incentives” as desirable components of a wellness program. **Implications:** Our results highlight wellness areas that our college can continue to focus on while also identifying ideas to incorporate into a future wellness program at our institution.

Assessment of Supplemental Instruction at the University of South Florida, College of Pharmacy. Jacqueline Grosser, Paul Carey, Shane Farmer, Kelley Graff, Brenae Hillard, Julie Melnyk, Heather MW Petrelli, *University of South Florida*. **Objectives:** The purpose of this project was to assess utilization of the Supplemental Instruction (SI) program, student satisfaction of SI services, perceptions of the helpfulness of SI to academic success, why some students choose not to utilize SI, and examined demographic characteristics of students utilizing the program. **Method:** Quantitative and qualitative data was collected utilizing a Qualtrics survey, which included twenty-four questions. Multiple-choice questions collected frequency of program use, reasons for non-use, awareness of the program, and demographic data. A five-point Likert scale assessed satisfaction of the program. Finally, open-ended questions garnered suggestions for improvements. **Results:** Results indicated third year students utilizing SI most (53.25%) followed by first (31.4%) and second year students (25%). When asked the rationale for not attending SI, 35% reported preference to study individually and 17% reported scheduling conflicts. The Likert scale revealed students perceived the impact of SI as increasing course material understanding (4.4 mean on scale of 1-5) and having a significant impact academic performance (4.0 mean scale on 1-5). Demographic data of program use indicated similar proportion to the college population. **Implications:** Data results in recommendations to include a follow-up survey determining the best times to offer SI, monthly workshops to improve skills of SI instructor skills, and trainer observations of SI sessions.

Comparison of Pedagogical Approaches in a Pharmaceutical Calculations Course. Donald A. Godwin, *The University of New Mexico*, Kristina M. Wittstrom, *The University of New Mexico*, Krystal McCutchen, *The University of New Mexico*. **Objectives:** To evaluate three pedagogical approaches for immediate, intermediate, and long-term retention of the skill to accurately perform basic pharmaceutical calculations. **Method:** Over a three-year period, three different approaches were used in the instruction of a calculations course to include online (online instruction/exams), hybrid (online instruction/written exams), and traditional (live instruction/written exams) approaches. Performance was tracked for immediate (same semester),

intermediate (4 months) and long-term (16 months) retention using a 20 question written exam. Statistical analysis included an ANOVA with a Holm-Sidak multiple comparison procedure. **Results:** Data showed no significant difference between the teaching approaches for immediate retention with class averages of 91.5%, 89.8%, and 88.9% on the final exam for the traditional, hybrid, and online approaches, respectively. Significant differences ($p < 0.05$) were found for intermediate retention with the traditional approach having higher performance (92.4%) than both the hybrid (88.8%) and online (82.1%) approaches, with an additional significant difference between those approaches. Preliminary analysis of long-term retention showed the hybrid format demonstrated significantly higher performance (82.1%) than the online format (78.3%). **Implications:** Both short and long term retention of pharmaceutical calculation skills are important for a practicing pharmacist. While immediate performance on a calculations exam showed no difference, the use of traditional lecture-based instruction with written exams promoted the intermediate retention of these skills. Even the use of written exams, as compared to online exams, appears to promote longer-term skill retention. Further analysis is needed to determine if a difference exists between the teaching approaches on even longer-term (2-3 years) retention.

Creating an Arms Race? Examining School Costs and Motivations for Providing NAPLEX and PCOA Preparation. Lisa Lebovitz, *University of Maryland*, Veronica P. Shuford, *Virginia Commonwealth University*, Margarita V. DiVall, *Northeastern University*, Kimberly K. Daugherty, *Sullivan University*, Michael Rudolph, *Marshall University*. **Objectives:** To examine the resources that Colleges/Schools of Pharmacy (C/SOPs) invest in for NAPLEX and PCOA preparation. **Method:** A web-based survey was conducted to determine types of resources and associated costs for NAPLEX and PCOA preparation. Data was analyzed using descriptive statistics. **Results:** 85 responses were received from 82 of 132 C/SOPs (62%); three respondents represented branch campuses. Three quarters (76%) of C/SOPs offer NAPLEX review including access to an external vendor's question bank (63%), live review by an external vendor (49%), live review by faculty (38%), and a mock NAPLEX test (38%); many employed multiple resources. While 19% reported spending nothing for NAPLEX review, 26% spend less than \$10K, 20% spend \$10K-\$25K, and 20% spend \$25K-60K. Reasons for not offering NAPLEX review include excellent historical performance on NAPLEX and belief that the curriculum provides sufficient preparation. The primary motivating factor for NAPLEX review is service to the students (62%), followed by recent drop in NAPLEX performance (20%), or historically poor NAPLEX performance (13%). Only 20% of C/SOPs provide PCOA preparation, including live review by faculty (27%) and question banks developed internally (18%) or by an external vendor (18%). Schools that do not provide PCOA preparation cited a desire to obtain unbiased estimates of student content knowledge, use of the exam as a low-stakes assessment, and lack of experience with the exam. **Implications:** Most C/SOPs provide NAPLEX review but resource type and expenditure vary considerably. Investment in PCOA preparation may increase depending how the data are used by C/SOPs and ACPE.

Design and Evaluation of a Learner-centered Orientation Program for Doctor of Pharmacy Students. Bradford L. Wingo, *University of North Carolina at Chapel Hill*, Jacqueline M. Zeeman, *University of North Carolina at Chapel Hill*, Wendy C. Cox, *University of North Carolina at Chapel Hill*. **Objectives:** To identify student perceptions and outcomes associated with a learner-centered, multi-stage, flipped orientation model for a doctor of pharmacy (PharmD)

program. **Method:** Over three years (2012-2014), first-year PharmD students engaged in a two-phased, learner-centered orientation model designed to provide greater student ownership of the orientation process and a customizable transition experience. Pre-orientation (phase one) was delivered asynchronously through the School's learning management system and was launched approximately three months prior to the start of classes. On-site orientation (phase two) allowed students expanded opportunities to connect with faculty and current students while empowering new students to take ownership in self-perceived areas for personal growth and learning. After orientation, students completed a survey to assess programming and their perceptions of success and readiness to begin the PharmD program. **Results:** In 2014, 78.9% of students (n=147) felt confident in their ability to transition to the PharmD program after orientation, an increase from 56% in 2012 (n=122) when the changes in orientation were first implemented. Likewise, in 2014, 79.6% of students felt prepared to experience a successful semester as a result of orientation compared to 57% in 2012. Associated student perceptions of readiness (including confidence, hopefulness, excitement) improved as well. **Implications:** Implementation of a learner-centered, multi-staged, flipped orientation may improve students' perceptions of readiness and decrease anxiety of transitioning to a PharmD program. Additionally, it may be an effective tool for increasing efficiency, while improving active student engagement in the transition process.

Designing Vertical Curricular Threads for ACPE Standard 4 – Professional Development Skills. Jane R. Mort, *South Dakota State University*, Teresa M. Seefeldt, *South Dakota State University*, Brad R. Laible, *South Dakota State University*, Michael Dianovsky. **Objectives:** ACPE Standard 4 (professional development skills) contains the subdomains of self-aware, leader, innovator, and professional. This project used the principles of learning progression to create a curriculum development process (Thread Design) that longitudinally integrated these subdomains into the curriculum. **Method:** The process includes two components. First, a blueprint illustrates the longitudinal development of subdomain's learning objectives (LOs). The blueprint contains student attributes (skills/knowledge) upon entry and completion of the program, along with the instructional strategies used to achieve the LOs. A set of questions was created to prompt blueprint development. Second, a thread synopsis outlines the specific components and expectations for the student and is similar to a syllabus. The thread synopsis contains definitions, outcomes, activities, goals, theories, assessment, optional opportunities, and assessment data documenting the impact of the instruction thread. These documents guide faculty and facilitate student understanding of the learning process for each subdomain. **Results:** Leadership was the College's first thread created in 2008. Currently, the leadership thread involves two content blocks, four instructional activities, three assessments, and five optional opportunities. While the subdomains of self-aware, innovator, and professionalism were taught prior to 2015, the curricular design was not based on the learning progression model. In 2015-2016, blueprints and thread synopses were created for these three subdomains which involved a total of nine content pieces, 15 activities, 11 assessments, and seven optional activities. **Implications:** Thread Design provides a robust, comprehensive, and intentional approach for the integration of professional development skills into the curriculum. This approach creates curricular clarity for faculty and students.

Development and Utilization of the Interprofessional Attitudes Scale (IPAS) to Assess Interprofessional Education (IPE). Donald K. Blumenthal, *The University of Utah*, Joan G. Carpenter, Jacqueline Eaton, Jia-Wen Guo, Madeline Lassche, Jeffrey Norris, Marge Pett.

Objectives: To develop and validate an instrument that can be used to assess the impact of IPE experiences on interprofessional attitudes. **Method:** An online survey containing questions based in part on the Readiness for Interprofessional Learning Scale and on the 2011 IPEC Core Competencies was administered to a diverse group of 1549 health professional students from the University of Utah Health Sciences (UUHS). The UUHS includes 5 schools and colleges (Dentistry, Health, Medicine, Nursing, and Pharmacy), with students from dentistry, medicine, nursing, pharmacy, physician assistant, nutrition, occupational therapy, physical therapy, and speech/audiology. The survey data were subjected to exploratory and confirmatory factor analyses (EFA and CFA) to validate the assessment tool, eliminate redundant questions, and cluster questions into subscales. **Results:** The result of the EFA was a 27-item, 5-subscale instrument that we named the Interprofessional Attitudes Scale (IPAS). The CFA indicated the content of the 5 IPAS subscales was consistent with the EFA model. Subsequent to the EFA and CFA, an additional 18 items were added to the IPAS to better cover the 2011 IPEC Core Competencies. This expanded 45-item IPAS is being used before and after all simulation-based IPE experiences at UUHS to assess changes in interprofessional attitudes. Statistical analyses of pre- and post-IPE IPAS survey data indicate in-person IPE simulations can positively impact interprofessional attitudes. **Implications:** IPAS can be used to assess the impact of IPE experiences on student attitudes towards working collaboratively in interprofessional teams.

Distance Education Goes Interprofessional: Collaborating for Success. Zara Risoldi Cochrane, *Creighton University*, Angela Bahle-Lampe, *Creighton University*. **Objectives:** Collaboration and an interprofessional approach are strategies for maximizing operational efficiency and effectiveness of pharmacy programs within health sciences schools. This scholarly work will describe the implementation of an administrative, interprofessional Office of Distance Education (ODE) among occupational therapy and pharmacy programs at Creighton University. **Method:** In order to launch an interprofessional administrative service that would meet stakeholder needs and advance academic excellence, an iterative process for gathering feedback and assessing needs was conducted. Twenty listening sessions were held with key stakeholders representing diverse perspectives from within the School, such as senior administration, admissions, eLearning, faculty, staff and programmatic assessment teams. This poster will describe this process as well as the benefits, challenges, opportunities, and resources needed to support interprofessional distance education initiatives in the health sciences. **Results:** From the listening sessions, a mission and vision were refined and top priorities emerged: onboarding and development of distance educators, communication, and policies/procedures for distance learning. An Advisory Panel was formed in order to share best practices across the OT and pharmacy professions, track and share data related to distance learners, develop an assessment plan, and address the top priorities. Although the Office of Distance Education serves many audiences, its primary role is in the stewardship of resources from both an administrative and student outcome perspective. **Implications:** This initiative offers a model of interprofessional innovation for any pharmacy program, and its application is not limited to distance education. In order to succeed, interprofessional initiatives must include formative assessment and engagement of key stakeholders.

Evaluation of Communication Best Practices Among AACP Special Interest Groups. Kerry K. Fierke, *University of Minnesota*, Whitney Maxwell, *South Carolina College of Pharmacy*, Dana E. Thimons, *American Association of Colleges of Pharmacy*, Lindsey

H. Welch, *The University of Georgia*. **Objectives:** The purpose of this study is to describe communication best practices across all 21 AACP Special Interest Groups (SIGs). **Method:** An electronic survey was distributed to the 81 executive officers of AACP's 21 SIGs. Respondents were asked to rate their ability to communicate with SIG members, describe the types and number of communication methods utilized, describe any barriers to communication, and rate the level of engagement of their SIG's members. **Results:** There were 31 respondents, including 12 responses from committee chairs, 9 responses from chair-elects, 4 responses from immediate past chairs, and 6 responses from SIG secretaries, for a response rate of 38.8%. The mean number of communication methods utilized by each SIG was 2.65, including email, website, blogs, webinars, toolkits, surveys, file sharing applications, and others. Over half of respondents identified that email was the most effective form of communication utilized. There were positive correlations between SIG communication abilities and member engagement ($p=0.002$) and between the number of communication methods used and communication abilities ($p=0.04$). The only negative correlation identified was between utilization of email as the only communication method and communication scores, but this relationship was not statistically significant. The most commonly reported communication barriers were low response rate, data overload, inadequate time, and listserv communication problems. **Implications:** Identification of best practices and communication effectiveness across SIGs provides the opportunity for SIGs to adopt and adapt communications with members and may help identify opportunities for systemic communication improvements within the organization.

Excellence in Academic Mentoring and Advising: Description of a Faculty Advisor Development Program. Renae J. Chesnut, *Drake University*, Jill Batten, *Drake University*. **Objectives:** Describe a cost-effective, sustainable, collaborative, and college-tailored faculty advisor academic mentoring development program. **Method:** The Excellence in Academic Mentoring and Advising, a faculty advisor development program allows faculty to select from numerous sessions with topics determined from an annual faculty advisor survey. Topics that have been covered include campus resources, career pathways, strengths-based advising, proactive and intentional conversations, and topics offered through national webinars. Advisors receive an annual certificate following the completion of six (6) sessions. Anonymous student advisee reflections are shared with individual advisors to reinforce and provide formative feedback while annual summative advising assessments measure advisee satisfaction in seven different areas: career planning assistance, knowledge of academic discipline, knowledge of campus procedures, knowledge of student support services, advisor accessibility, advisor/advisee relationship, and general advising effectiveness. **Results:** An increasing number of faculty have attended the sessions and earned the advising certificate. In 2015, the total hours dedicated to advisor development was 188 hours with 46 faculty and staff participating in at least one advising session, and nearly 50% of the faculty earning the Certificate of Excellence. Furthermore, since the implementation of the advising program, the college has seen improved satisfaction from students based on their responses to the College's annual advising survey. **Implications:** Developing an advisor education program can lead to better advising based on student feedback, ratings, and advisor satisfaction. Pharmacy programs can follow similar steps to successfully develop faculty advisor training programs that benefit faculty and students.

Increasing Efficiency through an Objective Standardized Scholarship Awarding Process. Laquanda Robinson, *University of South Florida*, Heather MW Petrelli, *University of South Florida*.

Objectives: Many programs desire to create scholarship processes that are holistic and standardized. Within the University of South Florida, College of Pharmacy (USF COP), a process was implemented interconnecting Student Affairs and Faculty Affairs. **Method:** The COP Scholarship application includes an application (community service, work experience, research, GPA, and admission data points), an essay from students, and information from the FAFSA. Review was initially subjective faculty on the scholarship committee reviewed every application. An initiative was developed to create a more standardized and objective process, while also reducing faculty workload. This was accomplished through first identifying data points to be scored in a rubric. To limit subjective outcomes, Student Affairs staff reviewed applications and scored rubrics based on standards set by faculty on the scholarship committee. Applicants are placed in numerical order based on the rubric during the Scholarship Committee review to evaluate the recommendations. During the review, outliers are addressed and potentially removed from consideration. The final review and approval is conducted by the COP Dean followed by disbursement of scholarship funds. **Results:** Entering the fourth cycle, we have learned to increase communication regarding plagiarism, allowing more transparency with students. This paperless process offers better utilization of financial resources and human task management. Scholarships are now awarded more fairly, consistently, and objective. **Implications:** Future research and disclosure is necessary to remain compliant with the access granting trends to higher education. This includes the federally mandated modifications to the FAFSA and admissions processes. Overall implemented processes should increase efficiency in awarding funds to students.

Is Gender a Factor in Academic Achievement in Pharmacy School? Krystal McCutchen, *The University of New Mexico*, Donald A. Godwin, *The University of New Mexico*, Tara S Hackel, *University of New Mexico*, Mary A Hershberger, *University of New Mexico*. **Objectives:** This study seeks to compare gender differences among correlations between undergraduate academic and admissions factors and academic achievement in a Pharm.D. Program. **Method:** A retrospective study examined admission factors and academic achievement information on graduates from a southwestern Pharm.D. program. Participants included 231 students ($n=140$ female) in three graduating classes. Data included incoming prerequisite GPA, PCAT composite score, PCAT sub scores, admissions committee score, total admissions score, and sixth semester cumulative Pharm.D. GPA. **Results:** An ANOVA revealed no significant difference in sixth semester Pharm. D. GPA by gender. Further, a multiple regression, with gender moderating, for admissions factors revealed no significant differences for the various factors considered for incoming students. Overall results indicate no significant difference for gender as an indicator of performance in a Pharm.D. curriculum. **Implications:** This study provides insight into the admissions and progression of Pharm.D. students, highlighting student performance varying on achievement factors, but also finding no evidence for gender differences. This provides a positive outcome for the admissions and progression of students through the program. Future studies should assess factors for achievement through different race/ethnicities or further break down of factors that predict success in pharmacy students.

Leading Positive Change through Effective and Inclusive Strategic Planning Initiatives. Reza Karimi, *Pacific University Oregon*, Danielle Backus, Rita Barton, *Pacific University Oregon*, Bridget Bradley, *Pacific University School of Pharmacy*, Anita J. Cleven, *Pacific University Oregon*, Ian C. Doyle, *Pacific University Oregon*, Fawzy A. Elbarbry, *Pacific University Oregon*, Jeff Fortner, *Pacific*

University Oregon, David Fuentes, *Pacific University Oregon*, Jeremy Hughes, *Pacific University Oregon*, Elizabeth Levins, Ashim Malhotra, *Pacific University Oregon*, Michael E. Millard, *Pacific University Oregon*, Catherine Marlow, *Pacific University Oregon*, Irene Moulton, Sigrid C. Roberts, *Pacific University Oregon*, Edward Saito, *Pacific University Oregon*, Samantha Stockmann. **Objectives:** To revise the program's triennial strategic plan and 1) develop strategic goals, 2) update mission, vision, and values 3) generate niche areas, and 4) identify measurable indicators aligned with those goals and niche areas. **Method:** Our strategic planning was initiated with discussions among internal (faculty, staff, students) and external (preceptors, alumni, advisory board members) stakeholders during an annual full-day retreat. The retreat was used to educate attendees about School's needs and impending changes due to ACPE Standards 2016 and the 2013 CAPE Educational Outcomes. During the retreat, all internal and external stakeholders participated in four breakout teams to answer key questions to develop a draft of strategic goals. During the following 5 months, we initiated discussions on distinguishing niches and strategic planning at several meetings and included additional input from internal and external stakeholders. **Results:** We generated a strategic plan that was compatible with our College and University missions and visions and included the 2015 NAPLEX blueprint, 2013 CAPE educational outcomes, ACPE Standards 2016, and AACCP Curriculum Quality Surveys results. The strategic plan included 5 goals, several measurable sub-goals, three niche areas, and a strategic goal indicator dashboard to show progress towards each goal. Our recent AACCP faculty survey data indicated 96% of faculty believed the development of the strategic plan was an inclusive process. **Implications:** Pharmacy programs undergoing a revision, or initial development, of their strategic plan may want to adopt a similar approach to effectively excite and engage their faculty, staff, students, and external stakeholders in this inclusive and intensive process.

Lies, Damn Lies, and Missing Statistics: Measures of Student Achievement Published on Pharmacy Program Websites. Joshua J. Spooner, *Western New England University*, Christina M. Di Donato, *Western New England University*, Kayleigh D. Mitchell, *Western New England University*, Matthew J Amaral, *Western New England University*, Daniel R. Kennedy, *Western New England University*. **Objectives:** To analyze the performance metrics listed on pharmacy program websites for the required, but undefined, "Measures of Student Achievement" metric required by ACPE. **Method:** Websites of 123 fully accredited pharmacy programs were reviewed in January 2016. Published metrics for law exam pass rates, job placement data, and postgraduate residency placement were collected; publication of these metrics were evaluated in comparison to national performance means (if available). **Results:** Amongst programs, 47.3% presented law exam passing rates, 43.1% presented job placement data, and 57.7% presented postgraduate residency placement. Programs exceeding the national MPJE mean pass rate were more likely to publish their results (56.9% vs. 37.0%; $P=0.050$); and more likely to publish multiple years' of results (81.9% vs. 52.9%; $P=0.047$) and provide national pass rate data (60.6% vs. 23.5%; $P=0.018$) within their metric. A wide range of job placement data was published; employment rates ranged from 64% to 100%, but few programs provided guidance indicating how this metric was determined. Postgraduate residency placement metrics included number of graduates landing residencies, percentage of graduates landing residencies (range: 5.7% to 61%), and match rate amongst applicants (range: 31% to 89%). Few programs published applicant match rates or the percentage of graduates landing residencies when these rates fell below the national mean (5.6% and 22.5% of programs, respectively). **Implications:** Pharmacy programs are more

likely to populate the "Measures of Student Achievement" metric with meaningful data when the data is favorable to the program. Cross-program comparisons of several outcomes of interest remain difficult for prospective students to ascertain.

Making Data-Driven Curriculum Improvements by Converting AACCP Curriculum Quality Survey Data to Information. Alejandra Zertuche, *University of the Incarnate Word*, Renato Leduc, *Feik School of Pharmacy*, David F. Maize, *University of the Incarnate Word*. **Objectives:** The American Association of Colleges of Pharmacy (AACCP) Curriculum Quality Surveys provide a quantitative assessment of pharmacy school curricula, and allow for data-driven curricular improvements to be made. AACCP's online survey system provides data from individual schools, peer-schools and national survey responses. Given the amount of available data, the task of analysis can be daunting and time-consuming. However, there exist technologies which may allow for more efficient assessment of these data. For example, TableauTM, a data-visualization application, supplies interactive reports that are coupled with statistical analyses from R©. Thus, we describe how we convert AACCP Quality Survey data into usable information and allow for data-driven curricular assessments at our school. **Method:** Utilizing TableauTM, survey responses from our school from 2010 to 2015 were assessed against peer-schools and national responses. This analysis was available within minutes of obtaining new AACCP data. The Chi-squared test of independence and the Adjusted-Wald Method were conducted to test for significance ($p<0.05$). Questions where our school's agreement responses were statistically lower than either peer-schools or national responses were defined as areas of opportunity. Questions where our school's agreement responses were statistically equal to or greater than both comparators were defined as areas of strength. **Results:** Interactive-visualization reports identified 27 areas of opportunity within our curriculum over a five-year period. Within that time frame 24 of these areas were converted to areas of strength. **Implications:** Conversion of AACCP Curriculum Quality Survey data to information utilizing technological platforms allow for much more efficient Quality Survey analysis and data-driven curricular change.

Marijuana Use Task Force (MUTF): Considerations for Schools Regarding Marijuana Use by Students, Faculty, and Preceptor. Maryann Z. Skrabal, *Creighton University*, George E. Downs, *University of the Sciences in Philadelphia*, Rodney A. Carter, *Regis University*, David H. Eagerton, *Presbyterian College*, Kari L. Franson, *University of Colorado*, Philip M. Hritcko, *University of Connecticut*, Paul W. Jungnickel, *Auburn University*, Julie C. Kissack, *Harding University*, James Ruble, *The University of Utah*, Carlos Torrado, *Palm Beach Atlantic University*. **Objectives:** Marijuana is illegal federally, but legal for recreational and/or medical use in several states. The MUTF was formed to identify issues/situations involving medical and recreational marijuana use that may negatively impact student pharmacists, faculty, and preceptors and make recommendations to Schools/Colleges to prevent problems with or minimize the impact of medical or recreational marijuana use. **Method:** MUTF was formed in the fall of 2015 to address the above objectives. Members represent a cross-section of faculty roles and expertise areas, as well as geographic diversity that either allows marijuana medically, recreationally, or neither. **Results:** MUTF members researched and shared information with the group based on areas of expertise, school and pharmacy employer policies, and state laws. Early results indicated that one universal recommendation by the MUTF would not fit each School's needs because of the differences in state laws. Additional information was organized into

a set of recommendations for all Schools to consider regarding marijuana use. The recommendations are intended to facilitate proactive planning by Schools. Identified issues included potential dismissal from school or employment or inability to get a job, loss of licensure or internship, and other negative consequences of an adverse background check. Recommendations will be reported in the poster. **Implications:** As more states legalize recreational and medical marijuana use, this issue will eventually impact all pharmacy Schools. The MUTF recommendations assist Schools and ultimately their students, faculty, and preceptors by proactively asking them to consider developing policies and providing education about the impact of marijuana use.

Pharm.D. Students Stress, Satisfaction, and Professional Attitudes Survey. Mark A. Munger, *The University of Utah*, Michael Feehan, *University of Utah*, Casey Tak, *University of Utah*. **Objectives:** Assess students': (a) satisfaction with the program; (b) levels of program-related stress and its life-impact; and (c) professionalism in domains such as professional reflection, the importance of inter-professional learning, cultural competence, and patient-centric values, through attitudinal batteries. **Method:** Two survey waves (2015 and 2016) collected data over time, and across P1-P4 classes; describe analyses of the attitudinal correlates of the relationship between perceived stress and satisfaction. Free-text fields allowed verbatim responses that suggest specific sources of stress and dissatisfaction. **Results:** There are levels of stress and a decrease in satisfaction across years of the program. Top program stressors are exams and lack of time to study at home. P4s in particular under high financial stress. **Implications:** The results of these surveys may provide guidance on to how to enhance students' programmatic experience with a view to reducing stress, improving satisfaction, and developing a cadre of highly professional practitioners.

Predictive Value of a Comprehensive P3 Knowledge Exam in Determining NAPLEX Success. Mary E. Ray, *The University of Iowa*, Lisa DuBrava, *The University of Iowa*, Deanna L. McDanel, *The University of Iowa*, Jeffrey C. Reist, *The University of Iowa*, Matthew Witry, *The University of Iowa*, Hazel H. Seaba, *The University of Iowa*. **Objectives:** The University of Iowa has utilized the internally built P3 Knowledge Examination (P3KE) since 2011, to inform students of knowledge-based strengths and weaknesses, provide feedback regarding curricular effectiveness, and serve as one of several markers to assess APPE readiness. To increase the exam's utility, we hypothesized that scores earned on the P3KE would correlate with NAPLEX scores, providing a benchmark for NAPLEX success. **Method:** Individual student results on the P3KE and NAPLEX for the Classes of 2012 - 2015 were analyzed using Microsoft Excel (2013) for Pearson's correlation, by cohort and by all four cohorts in congregate. A sub-analysis comparing P3KE scores to NAPLEX Areas 1, 2, and 3 was also performed. **Results:** Overall score performance on the P3KE was found to strongly correlate with the NAPLEX in congregate ($R=0.665$). Correlation was also strong within each class cohort (range of $R=0.641 - 0.786$). P3KE scores when compared to NAPLEX Areas 1, 2, and 3, demonstrated a stronger correlation in Area 1 ($R=0.570$) and Area 2 ($R=0.555$) than in Area 3 ($R=0.387$). **Implications:** The University of Iowa P3 Knowledge Exam and NAPLEX performance are strongly correlated. Though the Pharmacy Curriculum Outcomes Assessment (PCOA) is now a required examination in the P3 year, we plan to continue use of the P3KE in tandem with PCOA as a more direct assessment of our own curriculum. Future initiatives include comparative analysis of performance between P3KE and PCOA, as well as PCOA and NAPLEX.

Restructuring Academic Progression and Professional Conduct Management to Proactively Support Students and Stream Faculty Workload. Bridget Bradley, *Pacific University Oregon*, Jeremy Hughes, *Pacific University Oregon*, David Fuentes, *Pacific University Oregon*, Melanie Foeppel, *Pacific University Oregon*. **Objectives:** To modify an existing model of student issue management from a reactive process to a proactive process, allowing for improved detection of student issues and an increase in utilization of the faculty run Student Progressions Committee. **Method:** Restructuring of student issue management was initiated with discussions between student and academic affairs and with faculty members on the Student Progressions Committee. The restructuring looked at multiple factors affecting student progression, including methods for earlier identification of issues, adding layers of student support, the referral process to the progressions committee, and tracking of student issues. Markers for poor academic performance were identified, and a literature search was done to aid in the development of a model action plan for students. A new process was developed to cooperatively manage student issues between academic affairs, student affairs, and the faculty run student conduct committee. A flow-chart was created describing the referral and management of student issues, and an action plan template was created to assist students and faculty advisors. This information was disseminated via the Student Handbook and monthly program updates. **Results:** Modifications to student issue management resulted in an increase in the total number of conduct committee referrals in the fall semester (from 7 in 2014 to 27 in 2015), with the number of academic referrals increasing most significantly (from 2 in 2014 to 25 in 2015). **Implications:** Proactively managing student issues in a cooperative manner increases intervention opportunities for students.

Student and Faculty Perceptions of the Use of Examsoft as an Electronic Testing System. Erik Jorvig, *Roseman University of Health Sciences*, Catherine Cone, *Roseman University of Health Sciences*. **Objectives:** The objective of this study was to understand student and faculty acceptance of and adaptation to the newly implemented Examsoft electronic testing system. Influences of prior experience with electronic testing, gender, and device preference on satisfaction were investigated. **Method:** P1 and P2 students and faculty were surveyed electronically. Likert-style questions about acceptance and adaptation to Examsoft were asked of the participants with means reported on a scale of 1 to 5. Additionally, short answer questions asked participants about best features, worst features and suggested improvements. **Results:** Overall, student and faculty respondents showed a positive opinion of the Examsoft electronic testing system; however, students were more reserved in their acceptance. Respondents who most commonly used an iPad with the system reported higher satisfaction and easier adaptation to Examsoft versus respondents using a laptop; however, presence of prior electronic testing experience showed no significant correlation to acceptance or adaptation. Finally, female respondents showed slightly less overall satisfaction with the Examsoft system. **Implications:** Implementation of the Examsoft electronic testing system resulted in general acceptance and relatively straightforward adaptation among both students and faculty, even with respondents having no prior electronic testing experience. There was a marked preference, however, for iPad usage with the system. Further study may be needed to specify the need for additional training to ensure gender parity in use of the Examsoft system.

Technician Requirements in the United States. Ashlee Mattingly, *University of Maryland School of Pharmacy*, Jill A. Morgan, *University of Maryland*. **Objectives:** The purpose of this review is to

characterize the variation in training requirements across the 50 states in the US and District of Columbia (DC). **Method:** Statutes and regulations were reviewed to determine the initial qualifications for pharmacy technician registration and/or licensure across the US. Training was defined as either a program that required board-approval, American Society of Health-Systems Pharmacists (ASHP) accreditation, recognition as a technician not received until program completion, or any training beyond on-the-job training determined by the Pharmacist-in-Charge (PIC). Certification was defined as national certification. **Results:** Currently, 86% (44/51) of boards of pharmacy require technician registration or licensure. 51% (26/51) do not require additional training or certification and 49% (25/51) require training (10% - 5/51), certification (14% - 7/51), or a combination of the two (12% - 6/51 require both training and certification and 14% - 7/51 require either training or certification). **Implications:** The statutes and regulations across the US showed variations in the initial qualifications for pharmacy technicians resulting in technicians with differing levels of education and training. Pharmacy technicians play a critical role in delivering pharmacy services. Therefore, proper training and education of technicians is imperative to maintain the safety of the public and to ensure the technician has mastered the necessary skills to carry out their daily tasks. Awareness of the differences in technician requirements across the US may promote discussion around the potential benefits of a national standard for education and training for pharmacy technicians and future roles for schools of pharmacy.

The DELTA Rx Institute: Aligning Innovation and Entrepreneurial Leadership with ACPE and CAPE Outcomes. Andrea L. Kjos, *Drake University*, Renae J. Chesnut, *Drake University*, Charles R. Phillips, *Drake University*, Erin Ulrich, *Drake University*, Sally L. Haack, *Drake University*, Erik D. Maki, *Drake University*. **Objectives:** Describe how the DELTA Rx Institute provides student opportunities to participate in innovative learning environments that align with revised accreditation standards. **Method:** The DELTA Rx Institute's mission is to "instill a spirit of change and innovation in the pharmacy profession." Development of innovation and entrepreneurial leadership is one strategic emphasis, incorporated through the following activities: a "Next Top Entrepreneur Competition," an "Entrepreneurial Leadership Summer Internship," national business plan competition mentorship, a biannual newsletter, a website, and added in 2014-15, a student award and certificate program on rural health. **Results:** Programming directly aligns with CAPE domain 4.3 and ACPE 2016 standard 4.3 "Innovation and Entrepreneurship." Student opportunities have been developed and strengthened over time. The biannual newsletter and website have provided information and resources as well as profiles of pharmacy innovators. The entrepreneur competition has had 20-25 students participating each year. Summer internships have been externally funded for 7 years with more than 40 students participating. Students have submitted top 10 NCPA business plan proposals for 5 of the past 6 years. Outcome assessment and quality improvement is conducted annually with participant and preceptor feedback and via an advisory board. **Implications:** The Institute has developed and maintained student resources and programming that aligns with innovation and entrepreneurial leadership. Investments of time, funding, along with faculty and administrative commitment are foundational to championing the spirit of change. Pharmacy programs can follow similar steps to successfully build entrepreneurial leadership into student learning environments.

Use of Assessment to Track the Effect of Incremental Changes in Curriculum. Mary Choy, *Touro College of Pharmacy-New York*, Paramita Basu, *Touro College of Pharmacy-New York*, Batoul

Senhaji-Tomza, *Touro College of Pharmacy-New York*. **Objectives:** To describe the effect of a newly implemented assessment plan on phase 2 curriculum changes in a 2+2 curriculum **Method:** Incremental curriculum changes were implemented to address identified gaps via subjective and objective programmatic assessment. Phase 1 curricular changes included increased instructional time, strengthening of laboratory courses content, improved sequencing and integration of basic science topics longitudinally and vertically as well as consolidation of social and behavioral course content. Phase 2 curricular changes were based on an assessment plan including end-of-course reports, course evaluations, increased systematic communication between curriculum and assessment committees, faculty/student town hall meetings, and PCOA exam administration in the spring semester. **Results:** Our assessment plan identified further curricular gaps that resulted in phase 2 curriculum modifications including an increased number of therapeutic courses, increased case-based and active learning opportunities, and creation of a series of professional practice courses focusing on a pre-IPPE curriculum and clinical skills. Experiential curriculum discrepancies were also addressed as the current number of rotational blocks did not reflect a true 2+2 curriculum. The PCOA results will be evaluated as a predictor for NAPLEX performance. **Implications:** Curricular assessment is valuable in addressing gaps and strengthening a curriculum. Increased curricular and assessment communication is key in curricular quality improvement. Next steps will consist of continuously assessing curricular changes to evaluate their impact on first-time NAPLEX pass rates.

Utilization of Integrated Exam Outcomes and Student Self-Assessments to Provide Feedback to Multi-Dimensional Curriculum Mapping. Siu-Fun Wong, *Chapman University*, Pamela Mercado, *Chapman University School of Pharmacy*. **Objectives:** To ensure effective development and delivery of curricular integration, a global curriculum map was developed where all course objectives were mapped by the faculty to the student learning outcomes (SLOs) and ACPE Appendix 1 with cognitive levels (Foundation, Intermediate, Advanced, Mastery). The feedback mechanism to the faculty using summative assessment and student self-assessment data for continual improvement process (CIP) is studied. **Method:** Categorized items in 5 integrated exams and performance scores, and student self-assessed course-specific SLOs were gathered. Data were mapped to the curriculum map for analyses. **Results:** Exam items (N=273) from 2 courses were classified and analyzed according to "mapped" for Appendix 1 (N=179) or SLO (N=69), "mis-mapped" for cognitive levels in Appendix 1 (N=82) or SLO (N=76), and "non-mapped" to Appendix 1 (N=12) or SLO (N=128). Student performance scores were highest in the Foundation mapped (N=147) and non-mapped (N=8) items (84.56% & 87.07%, respectively). The lowest score was observed in the Advanced mis-mapped (N=8) item at 59.80%. Additional courses and complete trimester course data are being analyzed and compared. Student self-assessed course SLO evaluations (N=79) consistently averaged at Advanced level (SD~0.9). **Implications:** Preliminary data suggested "mis-" or "non-mapped" exam items resulted in less optimal performances as cognitive level escalates. Course faculty recommended to evaluate other assessments used for non-mapped domains, appropriate alignment of course and lesson objectives, and the cognitive levels expected in the course delivery.

Validity and Reliability of a PharmD Application Review Process Utilizing Dedicated Application Reviewers. Jacqueline M. Zeeman, *University of North Carolina at Chapel Hill*, Jacqueline E. McLaughlin, *University of North Carolina at Chapel Hill*, Wendy C. Cox, *University of North Carolina at Chapel Hill*. **Objectives:** To assess the

reliability and validity of a new application review process involving dedicated application reviewers within a doctor of pharmacy (PharmD) program. **Method:** A multi-staged admissions process was utilized during the 2014-2015 admissions cycle to evaluate PharmD applicants. After advancing through the academic review (stage 1), each candidate's application was independently reviewed by two dedicated application reviewers utilizing a six construct rubric (stage 2). The rubric evaluated written communication, extra-curricular activities, leadership, pharmacy career appreciation, research, and resiliency. Rubric results were extrapolated to a three-tier ranking to select candidates for on-site interview (stage 3). Kappa statistics assessed inter-rater reliability among application reviewers. A three-facet Multi-Facet Rasch Model (MFRM) analysis determined application reviewer severity, candidate suitability, and rubric construct difficulty. **Results:** The kappa statistic for the two application composite scores (n=388 candidates) was 0.315 with a perfect agreement frequency of 39.4% and a ± 1 score differential frequency of 41.8%. There was substantial inter-rater reliability between raters for the three-tier ranking (kappa: 0.656-0.724.) Highest agreement occurred within the research construct (kappa: 0.663-0.669). A three-facet MFRM analysis explained 36.9% of variance in the ratings, with 0.06% reflecting differences in reviewer scoring patterns (i.e. severity or leniency), 22.8% reflecting differences in candidate suitability, and 14.1% reflecting differences in construct difficulty. Research and leadership were identified as the most difficult constructs. **Implications:** Utilization of dedicated application reviewers and a defined tiered rubric provides a valid and reliable method to effectively evaluate PharmD candidate applications. These analyses provide insight into opportunities for improving the application review process.

Where Does the Time Go? Enhancing First-Year Pharmacy Student Self-awareness with Time-logging. Jacqueline M. Zeeman, *University of North Carolina at Chapel Hill*, Thomas A. Angelo, *University of North Carolina at Chapel Hill*. **Objectives:** To assess the effects of an educational intervention involving self-assessment (via time use prediction), self-reporting (via time-logging), self-reflection (via reflection questions) and discussion with peers (via focus groups) on intention to change and self-awareness of time-use habits in first-year (PY1) doctor of pharmacy (PharmD) students. **Method:** First-semester PharmD students predicted time spent on predefined activities during a typical weekday. Predefined categories included attending class, sleeping, studying, activities of daily living (e.g. hygiene, meals, travel), exercising, participating in co-curriculars, engaging in social activities, viewing social media, and working for pay. Students then completed a weeklong time-log exercise documenting time spent in these areas. Students utilized individualized time use summary reports to answer reflection questions and select students participated in focus group discussions. **Results:** Students (n=136) predicted their logged weekday time use with relative accuracy (predicted vs. logged) (mean \pm SD): sleeping 7.1 \pm 1.0 vs. 8.1 \pm 0.3 hours, studying 4.4 \pm 1.6 vs. 3.8 \pm 0.6 hours, and participating in co-curriculars 1.6 \pm 0.8 vs. 1.0 \pm 0.5 hours. Eighty-three percent of students found the time-log exercise useful and 64.9% stated it motivated them to reconsider or change their time use. Focus group participants (n=19) reported increased self-awareness and motivation to learn more about how to effectively change habits as a result of the time-log exercise. **Implications:** Time-logging interventions can enhance first-year PharmD students' self-awareness by providing opportunities to predict and reflect on their time use. They can also motivate students to seek assistance in modifying habits to improve their productivity and well-being.

Theoretical Models

An Online Independent Study Elective on Personal and Professional Branding. Stella Oppong, David Fuentes, *Pacific University Oregon*. **Objectives:** Personal and professional branding is important for pharmacists-in-training, allowing them to develop perspectives identity and connect their personal and professional goals. This aligns with CAPE 2013 domains 3 and 4. Herein, we: 1) describe the course structure, 2) share writing assignments, and 3) discuss the individualized coaching session between student/faculty member. **Method:** The elective in branding was developed to help students gain perspective on career opportunities that resonate with their top talents and personality traits. All students in the program are given the opportunity to take the Gallup®Strengths Finder assessment, as well as the Myer-Briggs Type Indicator (MBTI). Literature on branding and developing a personal mission from the areas of business and leadership development were consulted. Written essay assignments had the student link their strengths and personality traits with career goals. The course culminated a coaching session. **Results:** Written assignments resulted in the student being able to: 1) connect their Gallup strengths to their passion for the profession; 2) identify aspects of the profession, which resonate with their personality; 3) recognize extra-professional passions and interests essential to selecting the right job within the profession; and, 4) evaluate the important aspects of their own life (family, religion, etc.) to help them determine what career pathways in pharmacy will be most viable in the long-term. **Implications:** Personal and professional branding is important as students begin to identify possible career options. It may be useful for all pharmacy students to be exposed to such a course during their professional career.

Designing an Electronic Syllabus (eSyllabus) with Integrated Course Mapping. Mary E. Ray, *The University of Iowa*, Michelle A. Fravel, *The University of Iowa*, James Hoehns, *University of Iowa College of Pharmacy*, Lisa DuBrava, *The University of Iowa*, Hazel H. Seaba, *The University of Iowa*. **Objectives:** The process of curricular mapping is often tedious, requiring referral to course syllabi for initial information entry and manual updates as courses are modified. Our objective was to develop an electronic program to produce a standardized syllabus with both integrated curricular mapping at the time of creation and automatic re-mapping with syllabus modification. **Method:** After a literature review and exploration of existing software capabilities, we determined that a new application was necessary to standardize syllabus generation with integrated curricular mapping. The Curriculum Committee and Office of Assessment identified elements for eSyllabus inclusion. An application developer created the web-based application, which was tested at multiple points of development by faculty. **Results:** eSyllabus provides a standardized, high-quality PDF syllabus, templated text for required elements, linkage of course objectives to learning outcomes and assessment methods, and mapping of delivered content to ACPE Appendix 1, the NAPLEX Blueprint, and teaching methods. These elements facilitate customizable course and curriculum mapping reports. **Implications:** Creation and utilization of eSyllabus allows for real-time integration and updating of curricular mapping into the course development and delivery process. Additional benefits include the ability to develop and modify course design with greater attention to learning outcomes, superior visibility of the link between course activities and outcomes, and syllabus consistency utilizing common taxonomy between courses. eSyllabus has improved access to accurate content and outcome mapping for the entire curriculum and will expand opportunities to perform meaningful assessment for the purpose of curricular improvement.

Development of an Objective Merit Review Process for Pharmacy Practice Faculty. Andrew D. Klumper, *Purdue University*, Jeffrey D. Luke, *Purdue University*, Steven A. Scott, *Purdue University*, Kevin M. Sowinski, *Purdue University*, Deanna S. Kania, *Purdue University*, Alan J. Zillich, *Purdue University*, Kimberly S. Plake, *Purdue University*. **Objectives:** Traditionally, both the annual performance review and merit ranking process contain subjective items from which a ranking of individual faculty performance must be developed. We explored the creation of an objective, evidence-based method to achieve a more equitable, transparent, and streamlined process. **Method:** PubMed, MEDLINE, Google Scholar, ERIC, and ProQuest were queried for articles related to objective faculty review strategies. Six articles served as the basis for creating the initial tool specific for pharmacy faculty. Existing department expectations and data from previous years' annual faculty reports guided rubric development. The rubric was iteratively developed by the Department Executive Team. **Results:** The final tool includes two rubrics: a 67-item rubric for clinical track faculty and an 81-item rubric for tenure track faculty. Points are awarded based on criteria within each domain (learning, discovery, engagement, and citizenship) up to a maximum section total. Sections are weighted based on an individual faculty member's FTE allocation. Scores for each faculty member can be used to compare performance with previous years and between faculty members. Faculty merit rankings can be determined based on the distribution of scores across the department. **Implications:** Using the rubrics, the new merit ranking process will be compared to the old, traditional process during the 2015-2016 academic year to determine feasibility and address rubric performance issues. Additionally, faculty focus groups will be used to improve the rubric and ensure equity and process transparency. Once finalized, the rubrics can be shared with other pharmacy practice departments for use during their annual review and merit processes.

Innovation in the Open: Changing the Innovation in Teaching Award Process to Foster Innovation Discovery. Shannon R. Tucker, *University of Maryland*, Craig D. Cox, *Texas Tech University Health Sciences Center*, Kristin K. Janke, *University of Minnesota*, Daniel R. Kennedy, *Western New England University*, Michael J. Malloy, *MCPHS University*, Susan M. Stein, *Pacific University Oregon*, Hoai-An Truong, *University of Maryland Eastern Shore*, Velliyur Viswesh, *Roseman University of Health Sciences*, Catherine A. White, *The University of Georgia*. **Objectives:** The objective of this project was to redesign the Innovation in Teaching Award application process to (1) define innovation in teaching, (2) streamline the application process and (3) promote the visibility and transferability of teaching innovations. **Method:** Reviewing the Council of Faculties working definition of innovation in teaching provided baseline criteria to construct an information architecture to classify existing Innovations in Teaching Award projects. To achieve this, the committee evaluated the submission data from 1994–2014 to determine if common themes existed to help clarify what is commonly viewed as “innovation”. This informed an evaluation of the existing application process and its criteria to identify obstacles that discourage applicants. The committee also reviewed the AACP website and supporting literature to determine additional supportive opportunities. **Results:** The lack of consensus on the definition of innovation and 77% decline in applications suggested a need for a common innovation definition, application restructuring, and support for innovation discovery and transfer. The result was the creation of a two-step application process that (1) increased mentoring and feedback, (2) provided a flexible process supporting broad innovation, (3) aligned with publication standards, and (4) increased award visibility.

Utilizing the AACP annual meeting and website to promote the award and recognized innovations creates new opportunities for innovation adoption. **Implications:** Leveraging the Innovation in Teaching Award to showcase evidence-based innovative teaching methods creates an opportunity to advance pharmacy education. The streamlined application process and feedback is expected to increase the number and quality of award applications.

Re-Framing Pharmacy School Orientation to Advance Student Personal and Professional Development, Team-Readiness, Leadership, and Self-Awareness. Jeremy Hughes, *Pacific University Oregon*, David Fuentes, *Pacific University Oregon*. **Objectives:** To describe an orientation program for pharmacy students, that prepares them to start a professional program academically, but also introduces the basic fundamentals of and facilitates team-readiness, self-awareness and leadership through lecture and activities. **Method:** Student evaluations, assessment committee recommendations, and literature review were utilized to modify an Orientation Program for P1 and P2 students for the 2015/2016 Academic Year from one that was previously limited to policies and procedures. Heavy portions of compliance elements were identified and transformed into a self-study assessment based on the program's Student Handbook. We developed and presented content focusing more on developing the affective domains, utilizing active learning strategies to facilitate student learning. **Results:** The P1 and P2 Orientation Programs were re-framed to prepare students in both the cognitive and affective domains. Reflective journal writing and self-reflection strategies were presented in addition to Myers-Briggs Type Indicator and Strengths-Finder tests and applications. These were used as ice-breakers for team meetings with faculty advisors. An overview of student organizations, and a student organization fair, allowed students to see how they fit into the program's governance structure, highlighting opportunities for leadership development and service. Additional orientation activities included an individual and group mock exam, field exercises, and volunteer activities. **Implications:** An orientation program focusing on the affective and cognitive domains allowed us to emphasize personal and professional development topics. Inclusions of self-directed assessments and team-oriented activities allow students to practice communication, team-work, self-reflection, and leadership before traditional coursework starts.

Use of a Flipped Framework and Exam Item Mapping to Provide Teaching Feedback. Rebecca Kammer, *Flip It Consulting*, Siu-Fun Wong, *Chapman University*. **Objectives:** A Flipped Learning Framework (FLF) has supported the development of courses that use active learning at Chapman University School of Pharmacy. The FLF categorizes learning activities into four levels of complexity corresponding with levels of cognitive outcomes. Multi-dimensional curriculum mapping, led by the assessment office, linked examination items with levels of cognitive outcomes. This study describes the utilization of the FLF and exam item mapping in three active learning courses for feedback of teaching effectiveness. **Method:** Courses were selected based on the use of active learning throughout the course and the level of mapping of exam items. Using the FLF as a theoretical guide, a teaching specialist held interviews with the instructors to reflect on course learning activities, cognitive learning outcomes, and actual achievement of the outcomes based on both exam item data and in-class assessments. **Results:** (1) In comparing the proposed categorization of exam items to student performance data, three areas emerged in each course with varying degrees of frequency: Mapped items, Non-Mapped items and Mis-Mapped items. (2) Interviews with instructors

provided context to their learning activity as they reflected on what they had proposed in terms of cognitive learning outcomes (i.e. higher-order thinking skills) and whether they achieved what they had proposed. **Implications:** In reviewing courses with different levels of active learning, the FLF provided the conceptual framework for aligning learning activities within the courses. Exam item mapping provided a concrete measure of student learning. Both aspects were demonstrated to be useful in provide teaching and learning feedback to course instructors.

BIOLOGICAL SCIENCES

Completed Research

Assessment of Discipline-specific Student Performance in an Integrated Pharmacy Course. Joie Rowles, *Midwestern University*, Charles Veltri, *Midwestern University*. **Objectives:** We provide integrated sequence (IS) courses that include the interdisciplinary topics of pathophysiology and pharmacology (PP), medicinal chemistry (MC), and therapeutics (TX) of particular disease states. It is possible to pass the overall course ($\geq 70\%$) but fail one of the interdisciplinary topic areas ($< 70\%$). We want to determine if 1) this does occur and if so, 2) which topic area is most affected. **Method:** We assessed two integrated sequence courses for the Class of 2017, IS3 and IS6, taken in the first and second professional year respectively. We analyzed exam data by individual student, by interdisciplinary topic, and by total class performance. Data from approximately 140 students were analyzed for each course. **Results:** For IS3, 14 students failed the PP section and all passed the course except one; 19 students failed the MC section and all passed the course except one; 1 student failed the TX section and passed the course. For IS6, 8 students failed the PP section; 10 failed the MC; and 0 failed the TX; all students passed the course. **Implications:** These data suggest that students pass integrated courses but do not have minimal competence in interdisciplinary areas that are important in pharmacy education, especially the basic sciences. If these results are consistent (3 year longitudinal study is planned), they provide motivation to modify this particular curricular aspect, and thereby potentially to improve the educational and learning experience of our future student pharmacists.

Changes in Pharmacy Students' Attitudes and Confidence Following Personal Genotyping and Pharmacogenomics Educational Interventions. Amber Frick, *UNC*, Cristina Benton, *UNC*, Kelly L. Scolaro, *University of North Carolina at Chapel Hill*, Jacqueline E. McLaughlin, *University of North Carolina at Chapel Hill*, Courtney L. Bradley, *University of North Carolina*, Oscar Suzuki, *UNC*, Nan Wang, *UNC*, Tim Wiltshire, *UNC*. **Objectives:** Pharmacogenomics, once hailed as a futuristic approach to pharmacotherapy, has transitioned to clinical implementation. However, implementation by clinicians, has met resistance, partly due to a lack of education. This study aimed to analyze the outcomes of an innovative pharmacogenomic teaching approach. **Method:** Second-year pharmacy students (PY2s) (enrolled in a required, 15-week pharmaceutical care lab course in 2015) completed educational activities focusing on practical pharmacogenomics. Reflecting the current landscape of direct-to-consumer genomic testing, students were offered 23andMe genotyping. Students completed surveys regarding their attitudes and confidence on pharmacogenomics prior to and following the educational intervention. Paired pre- and post-intervention responses were analyzed with Wilcoxon signed-rank tests. Responses between genotyped and non-genotyped students were analyzed with Mann-Whitney U-tests. **Results:** Responses were analyzed for all PY2s who voluntarily completed the pre-intervention survey (N=121, 83% response) and for PY2s who completed both pre- and post-intervention

surveys (N=39), 59% of whom obtained genotyping. PY2s significantly increased their knowledge of pharmacogenomic resources (17.9% vs. 56.4%, $p<0.0001$) and confidence in applying pharmacogenomic information to manage patients' drug therapy (28.2% vs. 48.7%, $p=0.01$), particularly if the student had received genotyping. PY2s understanding of the risks and benefits of using personal genome testing services (55.3% vs. 86.8%, $p=0.001$) significantly increased along with agreement that personal genomics would likely play an important role in their future career (47.4% versus 76.3%, $p=0.01$), particularly among students who participated in genotyping. **Implications:** The educational intervention, including personal genotyping, was feasible and positively enhanced attitudes and confidence in pharmacogenomics in a professional program.

Comparing Traditional Case-Based Application and Student Question Creation Exercise on Student Performance and Perceptions.

Amulya Tatachar, *University of North Texas System*, Carol A. Kominski. **Objectives:** To compare impact of traditional case-based application exercise to student question creation exercise on a) student exam performance, b) student perceptions of enjoyment, competence, understanding, effort, interest in continuing participation and interest in subject. **Method:** Subjects were 84 second-year pharmacy students in fall 2015 pharmacotherapy course. Research focus was active learning dealing with chronic kidney disease-mineral bone disorder (CKD-MBD). Students formed 12 teams with 6-7 students each. Teams were randomly assigned to either case-based or student question creation exercises using PeerWise. Four multiple choice questions related to CKD-MBD assessed student performance prior to and after participation. After completion, an online survey assessed perceptions of enjoyment, competence, understanding, effort, interest in continuing participation, and interest in the subject matter. The UNTHSC Institutional Review Board approved the study protocol. **Results:** A two sample t test assuming equal variances compared the traditional case-based group to the student question creation group on gain score from pretest to posttest on the four questions related to CKD-MBD and found statistically insignificant differences. Two sample t tests assuming unequal variances found statistically significant differences in favor of the student question creation group on enjoyment and interest in the subject matter and insignificant differences between the two groups on competence, understanding, effort, and interest in continuing participation. **Implications:** Based on student survey responses, student question creation holds promise as an active learning tool with Pharmacy students. Larger samples and repeated applications are desirable to confirm positive findings in support of student question creation.

Comparison of StrengthsFinder Signature Themes in PharmD and DO Students.

Timothy J. Bloom, *Campbell University*. **Objectives:** Clifton StrengthsFinder is a tool for evaluating aspects of personality or "themes" identified by the Gallup organization as related to leadership. Several schools of pharmacy use it as part of their approach for teaching leadership, and a recent report from five Midwestern schools demonstrated a student deficit in signature themes grouped into the "influencing" domain. That report suggested this deficit might be particular to PharmD students, so StrengthsFinder profiles of pharmacy and medical students were compared for their distribution of signature themes. **Method:** PharmD and DO students at Campbell University were provided access codes for the online StrengthsFinder questionnaire. The signature themes for each student were analyzed for frequency in each student population and sorted into four domains according to the classification created by the Gallup organization. Distribution of themes was compared between populations using

descriptive statistics. **Results:** 40% of themes reported for PharmD students were in the “executing” domain while 35% of themes reported for DO students were in the “relationship-building” domain. Both student populations had far fewer themes in the “influencing” domain: 5% of PharmD student themes and 10% for DO students. Four of the five most common themes were shared by both populations: Achiever, Learner, Responsibility and Restorative. **Implications:** Although the StrengthsFinder program has been found to be useful for leadership development in Doctor of Pharmacy programs, it does not identify a pharmacist-specific profile of leadership traits that is distinct from other healthcare profession students.

Comparison of Fill-in-the-blank Quizzes vs Multiple Choice Quizzes and Performance on a K-type Final Exam. Brian Train, *Marshall University*, Nicole Rockich-Winston, *Marshall University*, Christopher Gillette, *Marshall University*, Michael Rudolph, *Marshall University*. **Objectives:** The objective of this study was to compare the effectiveness of fill-in-the-blank versus multiple-choice quizzes in preparing students for a K-type final exam. We hypothesized that students in the fill-in-the-blank group would have significantly higher final exam scores than students in the multiple-choice group. **Method:** This study used an experimental design. Students in a second-year laboratory course were randomly divided into two groups. One group received fill-in-the-blank quizzes throughout the semester and the other received multiple-choice quizzes. All of the students received the same K-type final exam. Independent samples t-tests and multiple linear regression was used to analyze the score on the final exam. Independent variables in the regression model included quiz group, student demographic variables, and prior achievement variables. **Results:** Seventy-three second year students participated in the study. Scores on the final exam were not significantly different based on group assignment (259.49 vs. 263.33; $t=-0.636$, $df=71$, $p=0.527$). Using multiple linear regression, students were significantly more likely to have higher scores on the final exams when they had a higher prerequisite GPA (unstandardized beta=0.301, $p=0.009$) and when they had higher scores on the Biology subsection of the PCAT (unstandardized beta=0.259, $p=0.028$). **Implications:** There was not a statistically significant difference between the two groups on the final exam, suggesting that students would perform equally as well on a K-type final exam using multiple-choice quizzes instead of fill-in-the-blank. Further, our study found that student success in the course was significantly related to prior academic performance.

Creating Teams Comfortably. Shannon Kinney, *Western New England University*, Eugenia Liu, Joshua J. Spooner, *Western New England University*, Eric C. Nemeck, *Western New England University*. **Objectives:** The objective of this study was to determine the optimal group composition of doctor of pharmacy students for team-based assignments. **Method:** Three required Professional Year One courses randomized learners using different methodologies. The first utilized a simple randomization, the second utilized results of the Myers-Briggs Type Indicator (MBTI) to create heterogeneous groups based upon the internal dichotomy, and the third allowed groups to self-select members. A previously validated, 11 question, small group relational satisfaction scale was administered electronically via SurveyMonkey. **Results:** Of the 71-72 learners enrolled in each course, 83.3% responded to the satisfaction survey for the simple randomization cohort, 84.5% for the MBTI cohort, and 60% for the self selection cohort. Students showed a slight preference for the MBTI randomization versus simple randomization, with 3 of the 11 items significantly better. Students in the MBTI groups felt that they were more a part of the group, could trust group members, and looked forward to group work more than students in the

randomized group. A comparison of all three methodologies showed an overall preference for the self-selected groups, with 10 of the 11 satisfaction questions scoring significantly higher than the other two methods. The only question that was similar across groups inquired if an individual’s absence would matter to the team. **Implications:** Learners reported that they were most satisfied with their teams when allowed to select their own. As group satisfaction is a surrogate measure for student learning, faculty use of elaborate means for determining group composition may be counterproductive.

Curriculum Transformation: Stepping into the ‘Abyss’ of CBE to Develop a Competency-driven Professional Curriculum. Diane W. Morel, *Philadelphia College of Pharmacy, University of the Sciences*, Karen J. Tietze, *University of the Sciences*, Katherine Koffer, *University of the Sciences*, Henry Schwartz, *University of the Sciences*, Laura Bio, Tyann F Thomas, *University of the Sciences*, Marvin Schulte, Lisa A. Lawson, *University of the Sciences*. **Objectives:** Competency-based education (CBE) is controversial mostly because of its faster/less expensive throughput. We were charged to develop an innovative curriculum delivery proposal for a competency-driven professional curriculum, with faculty input, and secure its approval. **Method:** The team first delved into the precepts and principles for successful CBE through literature review and conference with experts in the delivery of CBE, including healthcare education. We then defined the process; established performance levels for student growth in competency across the program utilizing the CAPE 2013 Outcomes/2016 Standards to identify global competencies and associated specific measurable abilities (MAs); reverse engineered a curricular scaffold from faculty elements (steps/objectives, that constitute MAs) at specific performance levels in a college-wide retreat; sequenced the collected input from faculty logically and in an upward spiral by grouping elements into common units (modules) within individual program years and identifying a unifying theme for each. Through open forums, faculty input was obtained to modify the proposal. **Results:** The final scaffold, with catalog descriptions and a delivery model, were approved for fall 2018. The approved curriculum, which is competency-‘driven’, not –‘based’, because of no acceleration path, is characterized by principles which include: transparency in expectations; focused delivery; full integration; periodic integrated competency assessments of student progress and curricular effectiveness; and continuous learning support. **Implications:** By empowering students with both the responsibility and accountability to achieve and confidently demonstrate their competency at increasing levels throughout the curriculum, they will be better prepared to enter the profession in a timely manner and contribute to its further evolution.

Development of an Interdepartmental Project to Increase Teaching Collaboration and Promote Active Learning. Teresa M. Seefeldt, *South Dakota State University*, Jane R. Mort, *South Dakota State University*, Brad R. Laible, *South Dakota State University*, Dennis D. Hedge, *South Dakota State University*, James R. Clem, *South Dakota State University*, Omathanu P. Perumal, *South Dakota State University*. **Objectives:** ACPE accreditation standard 10 emphasizes the need for content integration and active learning strategies in pharmacy curricula. To enhance these aspects, an interdepartmental teaching project was implemented involving all faculty in the pharmaceutical sciences and pharmacy practice departments. **Method:** Faculty were placed in groups containing 3-4 members for a total of 9 groups; the groups were intentionally designed to include faculty from both departments with complementary expertise. The projects began with group discussions on teaching design questions at a faculty workshop. Visits to the pharmaceutical sciences research labs and pharmacy practice sites were also arranged. Group leaders provided regular

updates on the projects at faculty meetings. The required design elements for the projects included learning objectives, instructional approach, course for inclusion of the activity, and assessment methods. **Results:** The most common learning objectives for the projects involved integration and application of course content. Patient cases were the most common active learning strategy chosen; other activities included group discussions and a guest speaker. The majority (5) of the activities took place in pharmaceutical sciences courses; two of the activities were placed in pharmacy practice courses, and two groups chose to have activities in courses in both departments. Activities occurred in first, second, and third year courses. Group assessment results indicated that both faculty and student perceptions of the projects were positive. Time (class time and faculty time) was cited as the major challenge in implementation of the activities. **Implications:** Overall, this project was successful in increasing both interdepartmental collaboration and active learning.

Do Pharmacy Students Prefer Web- Based Interactive Gaming Over Other Active Learning Methods? Wasana K. Sumanasekera, *Sullivan University*, Travis Jent, kaven Ly, Philip Hoang, Azadeh Sarafraz. **Objectives:** To investigate the most effective active learning approach in the Pharmacology classroom **Method:** To assure uniqueness of this project, a comprehensive literature search was performed using several databases including PubMed. Second year Pharmacy students were exposed to multiple active learning strategies such as cross word puzzles, instructional videos, music videos, flipped classroom, and Kahoot web- based interactive gaming throughout the Pharmacology course. Active learning strategies were implemented on several topics. The topics include anti-hypertensive drugs, kidney and diuretics, cardiac drugs, and diabetes. Students' perception on these methods were surveyed. In addition, in order to assess the effectiveness of active learning based teaching, pre and post-surveys were conducted **Results:** While 62% of students prefer active engagement in learning, 38% favor traditional teaching method alone. 94% of the class agreed on Kahoot gaming as an effective tool to retain the concepts being taught in the classroom. 40% -60% of students agreed on each of the other active learning methods are also being valuable tools to retain material. However, compared to several other active learning strategies, 86% of the students chose Kahoot interactive gaming as the most efficient method. Kruskal - Wallis one way analysis of variance was performed using sigma plot software. Kahoot active learning method was significantly the most preferable method. Based on post-survey results students significantly improved their Pharmacology knowledge **Implications:** In addition to retaining Pharmacology knowledge, student centered learning methods aid students to gain problem solving and critical thinking skills that are needed for future clinical and patient -centered care.

Effect of Dietary Doses of Resveratrol on Hepatic Drug Metabolizing Enzymes in Spontaneously Hypertensive Rats. Margarita Can, *Pacific University*, Deepa Rao, *Pacific University*, Fawzy A. Elbarbry, *Pacific University Oregon*. **Objectives:** We have previously demonstrated that exposure of Spontaneously Hypertensive Rats (SHR) to dietary doses of Resveratrol (RES) results in resistance to the progressive rise in blood pressure in this rat model. The objective of this study was to investigate the potential effect of these dietary doses of RES on drug metabolizing enzymes in SHR. **Method:** Rats were treated for 8 weeks with either drinking water alone (control) or RES (20 or 40 mg/kg) added to drinking water. At the end of treatment rats were euthanized, followed by preparation of liver microsomes and cytosols. The activity of the following cytochrome P450 (CYP) enzymes were measured in hepatic microsomes using specific probe substrates: CYP1A1, CYP1A2, CYP2B1/2, CYP2C9, CYP2E1, and CYP3A4. Cytosolic

fraction was utilized to measure total glutathione (GSH) level and activity of the following antioxidant enzymes: GSH-reductase (GR), GSH-peroxidase (GPx), GSH-S Transferases (GST), Superoxide dismutase (SOD), and Catalase. **Results:** The high dose RES treatment resulted in a significant inhibition of CYP1A2 and CYP2B1/2 activities. No effect of RES was observed on the rest of the studied CYP enzymes. On the other hand, both low and high doses of RES resulted in a significant induction of both hepatic glutathione level and activities of SOD, and Catalase. Only the high dose RES induced the activities of hepatic GST, GR, and GPx, to a significant effect. **Implications:** Dietary doses of RES have the potential to offer chemoprevention by stimulating the endogenous antioxidant systems and inhibiting CYP enzymes involved in bioactivation of procarcinogens.

Epigenetically-induced Changes in Mast Cell Function Can Modulate the Development of Allergy to Oral Antigens. Chelsea A Thompson, *Western New England University*, Stephanie Polukort, *Western New England University*, Catherine Dollard, *Northampton High School*, Shannon Kinney, *Western New England University*, Clinton Mathias, *Western New England University*. **Objectives:** Mast cells play a critical role in the establishment of allergic responses. We have recently shown that dietary components can modulate mast cell function during food allergy. Several studies also suggest that dietary agents can induce epigenetic modifications in immune cells contributing to their function. We therefore hypothesized that mast cell function is regulated via epigenetic modifications that induce changes in their activation and modulate the development of food allergy. **Method:** Trichostatin A (TSA), a histone deacetylase inhibitor, can alter transcriptional processes through epigenetic modification of chromatin. Bone marrow-derived mast cells (BMMCs) were treated with TSA and curcumin to study epigenetically induced changes in mast cell function. Similarly, wild-type mice were sensitized and challenged with ovalbumin and treated with TSA to determine whether inhibition of histone acetylation can affect the development of food allergy. **Results:** Exposure to IgE and antigen resulted in activation of BMMCS with enhanced expression and secretion of IL-4, IL-6, TNF-alpha and IL-13. In contrast, pretreatment with either curcumin or TSA resulted in altered expression and secretion of these cytokines. Furthermore, treatment of wild-type mice with TSA in a model of ovalbumin-induced food allergy resulted in a significant attenuation in the development of food allergy symptoms including decreases in allergic diarrhea, mast cell activation and allergen-specific IgE. **Implications:** These data therefore suggest that the epigenetic regulation of mast cell activation during allergic responses may occur via inhibition of histone acetylation, and that exposure to dietary substances such as curcumin may induce epigenetic modifications that modulate the development of food allergy.

Exploring the Metabolism and Topoisomerase II Inhibitory Activity of Cannabidiol. James T. Wilson, *Lipscomb University College of Pharmacy and Health Sciences*, Klarissa D. Jackson, *Lipscomb University College of Pharmacy and Health Sciences*, Susan L. Mercer, *Lipscomb University*, Joseph E. Deweese, *Lipscomb University*. **Objectives:** Cannabidiol is a major phytocannabinoid component of cannabis that lacks euphoric effects. However, this compound may have other impacts on cellular health. At least one derivative of cannabidiol, HU-331, has been shown to have anticancer activity by inhibiting the catalytic activity of topoisomerase II. Cannabidiol has not yet been examined for activity against topoisomerase II. Therefore, we set out to determine if cannabidiol impacts the catalytic activity of topoisomerase II. Additionally, we also

aimed to identify metabolites of cannabidiol to determine if cannabidiol is metabolized into HU-331 in vivo. **Method:** Purified human topoisomerase II α was used to determine if cannabidiol impacts enzyme activity in a purified system. Further, cannabidiol was incubated with human liver microsomes in the presence of NADPH, and liquid chromatography tandem mass spectrometry (LC-MS/MS) was used for metabolite analysis. **Results:** Our studies show that cannabidiol inhibits topoisomerase II α relaxation activity at around 50-100 μ M and does so independent of metabolism. Cannabidiol also displays the ability to inhibit ATP hydrolysis by topoisomerase II α in the same concentration range. Results from LC-MS/MS analysis reveal that cannabidiol is hydroxylated to form products structurally similar to a reduced form of the cannabinoid quinone, HU-331. Cannabidiol also forms nonenzymatic breakdown products in solution. **Implications:** In conclusion, these data indicate that cannabidiol impacts the ATPase and relaxation activity of topoisomerase II α . Microsomal oxidation of cannabidiol generates hydroxylated metabolites, which may be precursors to HU-331. Future work will focus on identifying the decomposition products of cannabidiol and determining whether these compounds impact topoisomerase II activity.

Exploring the Thiol Isomerase ERp57 in Cancer Progression Using Novel Small Molecule Inhibitors. Allissa M Long, *Western New England University College of Pharmacy*, Alexandra Feldenzer, *Western New England University College of Pharmacy*, Elizabeth Brunt, *Western New England University College of Pharmacy*, Kayleigh D. Mitchell, *Western New England University*, Daniel R. Kennedy, *Western New England University*. **Objectives:** Thiol isomerase enzymes such as ERp57 are thought to have polyfunctional involvement in the oncogenesis of cancer, where they play vital roles in activation of oncogenes, avoidance of apoptosis, and the resistance to chemotherapeutic agents. Previous studies have examined the role of ERp57 using activity blocking antibodies and to date, no small molecule inhibitors have been identified which specifically inhibit ERp57. In this study, we identified the first potential small molecules of ERp57 and tested their potential as anti-tumor agents **Method:** 3641 compounds were screened for ERp57 inhibitory activity using the insulin turbidity assay. Selected compounds were then selected for further investigation in assays of growth inhibition, cell cycle inhibition and alterations of cell signaling in 3 different cancer cell lines. **Results:** 17 compounds were selected for efficacy and specificity follow-up studies, and related compounds were purchased to perform SAR studies. Two main scaffolds were selected, an ERp57 specific inhibitor and a general thiol isomerase inhibitor, both of which were potent inhibitors of ERp57 enzymatic activity. Incubation of cancer cells with CA1 (10-300 μ M) dose-dependently inhibited cell growth. EGFR cell signaling was also inhibited in EGF stimulated cells with after treatment of cells for four hours of drug. **Implications:** In this study we have identified small molecule inhibitors of ERp57 and demonstrated potential activity as anti-tumor agents. The identification of small molecule inhibitors provides an opportunity to further explore the role of ERp57 in cancer development and may prove useful for development of future therapies.

Faculty Perspective on Scholarship and Institutional Expectations in Smaller, Teaching-Intensive Pharmacy Institutions in the United States. Manas Mandal, *Roseman University of Health Sciences*, Rajan Radhakrishnan, *University of Charleston*, Rajesh Vadlapatla, *University of Saint Joseph*. **Objectives:** To determine the faculty perspective on scholarship, research resources and institutional

expectations on scholarship in teaching-intensive pharmacy institutions. **Method:** An anonymous 20-question survey focusing on faculty perspectives on scholarship and institutional expectations was sent to the faculty of identified institutions through the respective Deans. The survey was open for six weeks, and the collected blinded data was analyzed in aggregate. The study was initiated after obtaining respective IRB clearance. **Results:** A total of 168 faculty members responded, of which 75% identified their institution as 'private non-profit', 23% as 'private for-profit' and 0.6% as 'public'. Eighty percent of the responders described their institution as 'teaching focused', 19% as 'teaching and research focused' and 0% as 'research focused'. Majority of the responders (77%) taught between 51-100 contact hours per academic year. Although 60% of the participants disagreed on institutional pressure for obtaining extramural funding, 83% agreed on strong institutional encouragement on pursuing SoTL compared to more expensive bench/clinical research. Only a minority (11%) received NIH grants, 22% received non-NIH extramural grants and 42% reported 'not planning to apply for research grants', While 57% faculty agreed on clear institutional expectation on research/scholarship at the time of hiring, 28% disagreed. Faculty was divided on the alignment of research expectation with the available resources, with 43% agreeing and 36% disagreeing. **Implications:** Survey results indicate divergent perspectives on research resources and institutional expectations on scholarship, and concerning tendency of deviation from basic science and clinical research among the faculty in smaller, teaching-intensive pharmacy institutions.

Impact of Pre-pharmacy Work Experience on Professional Identity Development in a Doctor of Pharmacy Program. Timothy J. Bloom, *Campbell University*, Jennifer D. Smith, *Campbell University College of Pharmacy & Health Sciences*, Wesley D. Rich, *Campbell University*. **Objectives:** Many professional programs, including schools of pharmacy, strongly suggest or require that applicants have prior experience related to the intended area of study despite inconsistent evidence that this experience has any impact on academic success. Little research has examined whether such experience prior to matriculation has an impact on other areas of student development, such as in the affective domain. The objective of this research was to determine if pharmacy experience prior to the PharmD program impacts the development of professional identity. **Method:** Students in a four-year PharmD program were recruited to take the Professional Self Identity Questionnaire for the Health Care Professions (PSIQ), a nine-item validated tool to measure development of professional self-identity in health care students. Scores on the 9-items were compared by previous pharmacy experience using independent samples t-tests. **Results:** Approximately 67% of currently enrolled students participated. 75% of respondents had pharmacy experience prior to matriculation, with females nearly twice as likely to have experience as males. First year pharmacy students with prior experience scored significantly higher on five PSIQ questions; however previous pharmacy experience had less impact on identity for second, third and fourth year students. **Implications:** First year student pharmacists with related professional experience prior to matriculation had more advanced professional identity scores than their peers, but the difference shrank dramatically for students in the second professional year and beyond.

Importance of Polyamines for Leishmania Proliferation and Infectivity. Sigrid C. Roberts, *Pacific University Oregon*, Dustin Paradis, *Pacific University*, Jasmine Perdeh, *Pacific University*, John

P. Harrelson, *Pacific University Oregon*, Jan Boitz, *Oregon Health & Sciences University*, Yates Phillip, *Oregon Health & Sciences University*, Buddy Ullman, *Oregon Health & Sciences University*. **Objectives:** A better understanding of parasite biology and host-parasite interactions is critical for the development of much needed new therapeutic strategies against the neglected tropical disease leishmaniasis, which affects an estimated 12 million people annually. Polyamines are metabolites that play central roles in the biology of all eukaryotes, and recent studies have highlighted their critical nature in *Leishmania* parasites. The objective of our study is to better understand the role of polyamines for parasite proliferation and to evaluate the enzymes of the polyamine pathway as potential therapeutic targets. **Method:** A series of gene deletion mutants has been generated in *Leishmania donovani* and the effects on in vitro proliferation and survival, as well as in vivo infectivity were analyzed. **Results:** In vitro observations demonstrated a critical role of the polyamine putrescine for parasite proliferation while the polyamine spermidine appeared to be more important for parasite survival. In vivo investigations implied that some but not all enzymes of the polyamine biosynthetic pathway are critical for infectivity and thus potential therapeutic targets. **Implications:** Our study has broad implications on drug target identification by elucidating the interplay between host and parasite polyamine metabolism and characterizing the functions of polyamines for parasite proliferation and survival.

Inhibition of Endocannabinoid Catabolizing Enzymes: Potential Mechanism of Anxiolytic Action of Chamomile. Kristine Manlimos, Nidhi Patel, Ehab A. Abourashed, *Chicago State University*, Abir T. El-Alfy, *Chicago State University*. **Objectives:** Anecdotal reports and small randomized clinical trials document a robust role of German chamomile (*Matricaria recutita* L.) in anxiety but the mechanism of such anxiolytic action remains unclear. Preliminary studies in our laboratory have shown that total chamomile extract significantly inhibited the endocannabinoid catabolizing enzymes, fatty acid amide hydrolase (FAAH) and monoacylglycerol lipase (MAGL). The goal of this study was to isolate and characterize the compounds responsible for such activity. **Method:** A total methanolic extract of chamomile powder was initially prepared, followed by fractionation with hexane, chloroform, ethylacetate, and methanol. The HPLC-profiled fractions were evaluated for inhibition of human recombinant FAAH and MAGL enzymes using 96-well plate assays. Active fractions were subjected to further bioassay-guided chromatography until a pure, active compound was isolated. **Results:** The hexane fraction demonstrated the highest inhibition of both FAAH (88.3%) and MAGL (60.0%) enzymes. Further fractionation resulted in three active subfractions. Time course inhibition assays showed that the enzyme recovers following 48 hours of exposure indicating reversibility of the inhibition. Using chromatographic techniques, a pure, active compound was isolated and spectroscopically characterized. The compound isolated was identified as linoleic acid. **Implications:** The study is the first to report that chamomile extract interacts with the endocannabinoid system, and that such interaction might play a role in the known anxiolytic effect of chamomile.

Integrating First, Second and Third Year Students into Teams for a Novel All College Laboratory. Diane M. Calinski, *Manchester University*, Jennifer A. Henriksen, *Manchester University*, Brian S. Henriksen, *Manchester University College of Pharmacy*. **Objectives:** This laboratory experience was intentionally designed to provide third year pharmacy students the opportunity for leadership and peer-teaching

in a small group setting. The students were placed in cross-class integrated teams and the teams' objectives were to: (1) Develop a patient care plan, (2) Present relevant medicinal chemistry and pharmacology considerations to the care plan, and (3) Provide all necessary calculations for the care plan. **Method:** The Cancer Day laboratory was designed to apply student teams' comprehensive knowledge to an oncology patient case. Teams consisting of first, second and third year students were created for the Cancer Day laboratory experience. To prepare the students for the experience, the presentation rubric was provided with the requirements explicitly stated. The requirements were appropriately aligned to the student's progression through the curriculum. The students were surveyed with regards to this experience. **Results:** The cross-class laboratory was successful in obtaining the aforementioned team objectives. The student survey results indicate that most students agreed that they made meaningful contributions to their teams, and that their teams focused on the creation of the presentation during the laboratory. The students generally agreed that Cancer Day made them more comfortable with course material and strongly agreed that the experience made them more comfortable with students from other classes. **Implications:** The Cancer Day experience is distinctive in its design and influence on student learning. The experience emphasized the differences in the P1, P2 and P3 student cohorts while exhibiting the maturation and education that is expected of senior students in the program.

Integration of Pharmacogenomic Education Throughout a Pharmacy Curriculum and its Influence on Student Knowledge/Perception. Rebecca R Marcinak, *Western New England University*, Meaghan H. Paris, Shannon Kinney, *Western New England University*. **Objectives:** The current study continues our previous work that revealed a significant increase in the knowledge and comfort of students applying pharmacogenomics to patient cases after completing a required Genetics/Pharmacogenomics course in the PY1 year. We also assessed whether students who have taken the course 2-3 years previously (PY3-4) remain comfortable with application of pharmacogenomics and their exposure to pharmacogenomics in other courses and experiential work. **Method:** Similar to our previous study, an online survey was distributed to PY1 students during the first and last weeks of the Genetics/Pharmacogenomics course. An analogous online survey was distributed to PY3 and PY4 students. Data analysis was performed using Prism Graphpad. **Results:** Pre-post analyses for both PY1 groups revealed similar increases after completing the course. Amongst other decreases, PY3-4 students were less likely to agree that they could interpret information from a pharmacogenomic test ($p < 0.01$). Interestingly, they remained confident in their role and ability to apply pharmacogenomic information to therapeutic recommendations. They also indicated several later courses in the curriculum that touched upon pharmacogenomics, but had minimal exposure at their experiential sites. **Implications:** The data suggest that a required Genetics/Pharmacogenomics course improves student comfort and abilities in the use of pharmacogenomics. However, this reverts to some degree as they continue through the curriculum. We are currently gleaming more details about the depth and breadth of pharmacogenomics in other didactic courses, and will be assessing the perception and knowledge of preceptors in order to obtain a clearer picture of the integration of pharmacogenomics throughout our curriculum.

Interactions of Murine Red Blood Cells and Brain Microvascular Endothelial Cells. Rudy Chang, *School of Pharmacy, Keck Graduate*

Institute, Claremont, CA 91711, Kei-Lwun Yee, School of Applied Life Sciences, Keck Graduate Institute, Claremont, CA 91711, Ruaab Patel, School of Applied Life Sciences, Keck Graduate Institute, Claremont, CA 91711, Russle Benson, School of Pharmacy, Keck Graduate Institute, Claremont, CA 91711, Mark J Fisher, Department of Neurology, University of California, Irvine, Rachita K. Sumbria, Keck Graduate Institute. **Objectives:** Increased red blood cell (RBC)-vascular endothelium interactions have been documented in sickle cell anemia, diabetes mellitus, malaria, and sepsis. However, interactions between the brain microvascular endothelium and naive RBCs exposed to different pathological conditions have not previously been investigated. The primary aim of the current study was to examine alterations in RBC-brain microvascular endothelium interactions in the presence of pathological stimuli. **Method:** Interactions between murine RBCs and brain microvascular endothelial cells (bMEC, bEnd.3 cell line) were studied in a static in vitro system. bEnd.3 cells, primed with or without 100ng/mL lipopolysaccharide (LPS), were incubated with control RBCs or RBCs exposed to: LPS (10µg/mL; an inflammatory stimulus), tert-butyl hydroperoxide (t-BHP; 3mM; an inducer of oxidative stress) or neuraminidase (0.125U; for sennescence induction). RBC adhesion was quantified using hematoxylin and eosin (H&E) stain and light microscopy. **Results:** Exposure of RBCs to either LPS or neuraminidase resulted in a significant 3-fold ($p < 0.05$) increase in RBC adhesion to bEnd.3 cells. t-BHP treatment produced a remarkable 13-fold ($p < 0.05$) increase in RBC adhesion to bEnd.3 cells. However, priming of bEnd.3 cells with LPS did not further enhance these LPS, neuraminidase and t-BHP effects. Overall, exposure of murine RBCs to different pathological stimuli promoted RBC binding to bMEC, with the effect of oxidative stress on adhesion being the most robust. **Implications:** These findings are clinically relevant since a) an increase in RBC-bMEC adhesion may render the cerebral microvasculature prone to micro-occlusions, and b) transmigration of adhered RBCs into the brain may result in cerebral microbleed/microhemorrhage development.

Iron Deficiency During Brain Development Alters the Developing Cerebrovasculature. Thu An Nguyen, *University of Minnesota*, Carl E. Anderson, *University of Minnesota*, Grant W Anderson, *University of Minnesota*. **Objectives:** Iron deficiency anemia (IDA) is a global health problem with profound effects on pregnant women and young children. IDA largely impacts the developing brain, leading to poor cognitive outcomes. We recently demonstrated that iron deficiency induces vasculogenesis in the developing neonatal rat brain. Our current hypothesis is that neonatal iron deficiency activates hypoxia-inducible factor 1 alpha (Hif1-alpha) leading to induced expression of several genes associated with vasculogenesis. **Method:** In this study, we assessed the impact of fetal and neonatal iron deficiency on the rat brain vasculature at birth, and postnatal days 7, 14 and 30. We assessed the protein levels of Hif1-alpha, the expression of genes associated with vasculogenesis, the expression of endothelial cell marker genes, and vascular density in the developing brain. **Results:** mRNA analyses revealed increases in endothelial cell marker and vasculogenesis associated gene expression in the iron deficient neonatal rat brain at birth, and postnatal days 7 and 14. Iron repletion on postnatal day 7 normalized mRNA levels by postnatal day 14. Western Blot densitometry results indicated a possible increase in Hif1-alpha expression in iron deficient brains compared to control at postnatal days 7 and 14. Immunohistochemical assessment of vascular density revealed significant increases in density at postnatal day 14 in the iron deficient brain. **Implications:** Our data reveal that iron deficiency induces vasculogenesis throughout late brain development. These findings raise the possibility that nutrient and drug

delivery across the blood-brain barrier may be altered in the face of developmental iron deficiency.

L-Dopa as a Therapeutic Approach to Mitigate Basal Ganglia Dysfunction Associated with Methamphetamine-Induced Neurotoxicity. Kristen A. Keefe, *The University of Utah*, David P. Daberkow, *Eastern Washington University*, Jong-Hyun Son, Elissa Pastuzyn, Christopher Howard, *The Salk Institute*, Paul A. Garris, *Illinois State University*. **Objectives:** Exposure to methamphetamine induces a partial depletion of striatal dopamine in animal models. Further, humans with a history of METH abuse are at increased risk for developing Parkinsonism, suggesting that some likely experience prolonged periods with partial dopamine loss as a result of METH use. The goal of our studies is to determine the impact of such partial dopamine loss on basal ganglia function and explore therapeutic approaches to restore basal ganglia function. **Method:** To this end, we use fast-scan cyclic voltammetry, in situ hybridization histochemistry, and behavioral pharmacology. **Results:** Our data show that METH-induced dopamine loss decreases phasic, but not tonic, dopamine release in dorsal striatum. This decrease is associated with impaired basal and behaviorally evoked gene expression in striatonigral, but not striatopallidal, neurons of dorsal striatum. Further, there are changes in the learning and memory functions of striatum, with METH-exposed rats failing to transition to habitual control over behavior and showing altered neural circuitry mediating motor response reversal learning. L-Dopa, which increases vesicular DA content, restores the amplitude of the phasic dopamine signal in METH-pretreated rats. **Implications:** These findings suggest that although animals and individuals with a history of METH abuse with partial striatal dopamine loss may appear to be functioning relatively normally, the system as a whole does not fully compensate for the partial dopamine loss. We propose that impaired phasic dopamine transmission and consequent impairment of striatonigral / direct-pathway neuron function may contribute to cognitive deficits and that L-Dopa may be an effective pharmacotherapy to mitigate such consequences.

Learning and Study Strategies Associated with Academic Success in the First Year of Pharmacy Education. Ligia Westrich, *Fairleigh Dickinson University*, Diane Wentworth, *Fairleigh Dickinson University*, Anastasia M. Rivkin, *Fairleigh Dickinson University*. **Objectives:** Examine the utility of the Learning and Study Strategies Inventory (LASSI) and selected demographic variables in predicting academic success in first-year pharmacy students. **Method:** Students ($n=85$) enrolled in the first professional year completed the LASSI survey at the beginning of the fall semester and again at the end of the following spring semester. LASSI is a 10-scale assessment of students' awareness and use of different learning and study strategies. A demographic survey was also completed by 76% of the participants. Students were encouraged to review their LASSI scores and modify study approaches as needed. Correlations between LASSI scales and GPA were performed. A multiple regression was run to predict GPA from the ten LASSI scales, gender, and number of study hours/week. **Results:** Five LASSI scales (Anxiety, Information Processing, Motivation, Selecting Main Ideas and Test Strategies) were significantly correlated with end-of-first-year GPA. All ten of the LASSI scales, gender, and number of study hours/week were entered in the multiple regression model that significantly predicted GPA ($F(12,64)=3.865$, $p < 0.0001$, adjusted $R^2=0.349$). The LASSI Attitude and Motivation scales added significantly to the prediction, $p < 0.01$. **Implications:** Utilizing the LASSI survey assists students in assuming responsibility for their own learning. It provides a self-assessment of the skills and attitudes needed to achieve required competencies in

the earlier stages of the professional pharmacy program. As Attitude and Motivation contribute significantly to the end-of-first-year GPA, increasing students' awareness of these areas should be considered and targeted interventions may be implemented to assure continued academic success.

Luteolin Attenuates EGFR Mediated Proliferation and Induces Apoptosis in Glioblastoma. Samson Amos, *Cedarville University*, Denise Simpson, *Cedarville University*, Rachel M. Wilcox, *N/A*, David Anson, *Cedarville University*. **Objectives:** Glioblastoma multiforme (GBM) is widely recognized as the most common and lethal of the malignant gliomas. Few effective therapeutic treatments are available with a 12-14 months survival. The epidermal growth factor receptor is overexpressed and amplified in GBM. This receptor plays a key role in glioma formation, glioma proliferation and invasion. Luteolin, a common flavonoid found in a variety of fruits and vegetables, has demonstrated significant promise in combating cancers of the breast, colon, liver, lung, and bone. In this study, we investigated the effects of luteolin on glioblastoma multiforme cell lines U-251, U-87, and U-1242. **Method:** Cell counts using the Trypan blue exclusion, cell proliferation using MTT. Western blot analyses **Results:** Our results revealed that luteolin reduces GBM cell viability and cell proliferation in a time and concentration-dependent manner. Western Blot analyses indicated that luteolin decreased AKT, mTOR and MAPK phosphorylation following treatment with EGF. Additionally, luteolin promoted apoptosis in GBM cells by inducing PARP and caspase-3 cleavage, and decreasing levels of the anti-apoptotic protein BCL-XL. **Implications:** Our results indicate that luteolin exhibits a biological effect and may serve as a potential therapeutic agent in the management of glioblastoma multiforme

Mapping Required Biological Science Courses in Pharmacy Curricula to the PCOA Exam. Alexandra Feldenzer, *Western New England University College of Pharmacy*, Matthew D Aguilera, *Western New England University College of Pharmacy*, Nicholas Sesto, *Western New England University College of Pharmacy*, Joshua J. Spooner, *Western New England University*, Daniel R. Kennedy, *Western New England University*. **Objectives:** The Pharmacy Curriculum Outcomes Assessment (PCOA) is a new universal requirement instituted to measure student performance in the Pharm.D. curricula. Of its 28 subtopic domains, 9 are fields that are primarily considered to be Biological Science topics. The purpose of this study was explore how commonly each of these domains was presented as a required course in the curriculum of each ACPE accredited US pharmacy program. **Method:** Each of the 134 US pharmacy program's websites were examined for the professional curriculum and pre-pharmacy prerequisites to determine if they required a course in the 9 Biological Science domains on the PCOA: Physiology, Microbiology, Cellular Biology/Genetics, Immunology, Biochemistry, Pharmacology, Toxicology, Pharmacognosy, or Pharmacogenomics. Common alternative nomenclatures (such as "Personalized Medicine" for pharmacogenomics) were also accepted. **Results:** Courses such as Pharmacology and Physiology were found in almost every program. Biochemistry (86.6%), Microbiology (76.1%), and Immunology (67.2%) were also commonly offered as stand-alone required courses, although Physiology (63.4%) and Microbiology (54.5%) are most commonly pre-pharmacy requirements. In contrast, Molecular Biology (44.0%) Pharmacogenomics (35.1%), Toxicology (16.1%), and Pharmacognosy (9.1%) were not commonly found as stand-alone required courses. **Implications:** While some of the Biological Science subdomains of the PCOA are fairly

ubiquitous in pharmacy curricula, others (especially Toxicology and Pharmacognosy) are rarely taught as stand-alone required courses. Caution should be used when using the PCOA to assess a student's mastery of the curriculum, as the exam may not be well mapped to a program's curriculum and desired student knowledge outcomes.

Nuclear and Mitochondrial Ultrastructural Changes During Acetaminophen (AAP) and Dimethylnitrosamine (DMN)-induced Liver Injury. Sidhartha D. Ray, *Manchester University*, Sipan Keshishyan, *Manchester University College of Pharmacy*, Marina Rizkalla, *Manchester University College of Pharmacy*, Vladlena Kovalevskaya, *Manchester University College of Pharmacy*, Tuan H Tran, *Manchester University College of Pharmacy*. **Objectives:** Drug-induced liver injury continues to present a challenge in drug therapy. Molecular mechanisms underlying AAP and DMN-induced liver injury have indicated specific signaling pathways involving apoptotic and necrotic cell death; unfortunately, ultrastructural changes are seldom taken into account to interpret underlying causes of injury. Historically, pro- and anti-apoptotic genes, oxidative stress sensitive molecular changes (cytochrome c leakage) & specific caspase-mediated nuclear fragmentation were considered to be the major drivers. Therefore, this study analyzed: specific ultrastructural changes associated with nuclear and mitochondrial compartments under the influence of AAP and DMN. **Method:** Five separate groups of male ICR mice (n= 6-10; >3 mo old) were administered AAP and DMN (500 and 100 mg/kg, ip, respectively) and sacrificed at 0, 6, 12, 18 and 24 hours later. Liver sections were processed for Electron Microscopy to study ultrastructural changes and tissue biochemistry for cytochrome c leakage from mitochondria. **Results:** Compared to control, both toxins elevated alanine aminotransferase, increased cytochrome c release into cytosol (western blot), and caused massive genomic DNA fragmentation (chromatin fragmentation). Ultrastructurally, the most common mitochondrial features were: abnormal swelling, loss of membrane integrity, distorted morphology and disorganized inner membrane (cristae). Nuclear alterations showed irregular margins, membrane breakdown/dissolution, apoptotic condensation to chaotic fragmentation in the presence of massive cytoplasmic abnormalities (accumulation of lipid droplets, numerous vacuoles and distorted RER/SER). Phagocytosis of apoptotic bodies were also observed. **Implications:** This study may have suggested the importance of evaluating cytochrome c release, ultrastructural changes and tissue biochemistry while diagnosing DILI.

Parkinson's Disease Causing Mutation in LRRK2 Impairs Early Steps in Autophagosome Biogenesis. Radek Linhart, *Keck Graduate Institute*, Davin Graduate Kaing, Joseph Rosales, Melissa Salvatin, Ariel Dahan, *Keck Graduate Institute*, Steve Choi, *Keck Graduate Institute*, Yalda Chalabi-Hajkarim, *Keck Graduate Institute*, Ilona Graduate Kravtsova, *Keck Graduate Institute*, Nolan Lassiter, *Keck Graduate Institute*, Ana Mustafa, *Keck Graduate Institute*, ARIANA AYON VERDUZCO, *KECK GRADUATE INSTITUTE*, Joana Kozeli, *Keck Graduate Institute*, Marjan Askari, *Keck Graduate Institute*, Katerina Venderova, *Keck Graduate Institute*. **Objectives:** Leucine-rich repeat kinase 2 (LRRK2) is the most common causative gene of Parkinson's disease (PD), however its pathogenic mechanism(s) of is not clear. The goal of our work is to identify cellular pathways involved in PD pathogenesis. **Method:** We employed our *Drosophila* lines (Venderova, *Hum Mol Genet* 2009) expressing the I2020T pathogenic variant of LRRK2. These flies present with a robust loss of dopaminergic neurons and locomotor deficits. Using these transgenic flies, we performed a targeted screen in vivo. **Results:** Our results

demonstrate that the locomotor deficits of any of the pathogenic mutant LRRK2 flies were completely rescued by overexpression of Atg17/RB1CC1 - one of the key genes required for autophagosome formation. Atg17/RB1CC1 is necessary for activation of Rab1. Overexpressing wild-type or constitutively active form of Rab1, a GTPase that is physiologically activated by Atg17/RB1CC1, also rescued the LRRK2 phenotype, while co-expressing mutant LRRK2 with the dominant negative form of Rab1 was lethal. In line with our data, overexpressing a core component of the guanine-exchange factor required for activation of Rab1, Trs23/TRAPPC4 also rescued the mutant LRRK2 phenotypes. We next tested whether LRRK2 is required for autophagy. Indeed, flies expressing only one copy of the *lrrk* gene had a much shorter survival under starvation conditions, presumably due to impaired autophagy. Inducing autophagy by overexpressing Atg1 causes an eye phenotype. This phenotype is markedly suppressed in *lrrk* knock-down flies, and enhanced in flies overexpressing LRRK2. **Implications:** Our data suggest that LRRK2 regulates autophagosome formation, and that this process is impaired by PD variants of LRRK2.

Pharmacy Students Attitudes Towards Substance Abuse: Exposure to a Drug Abuse Elective Makes a Difference. Jilla Sabeti, *Western New England University*, Matthew R. Dintzner, *Western New England University*, Jillian O'Keefe. **Objectives:** Studies suggest that lack of curricular exposure to substance abuse knowledge can contribute to persistent negative attitudes among medical and nursing students, adversely impacting practices related to substance abuse and addiction treatment. We aimed to (1) measure pharmacy student attitudes towards patient drug abuse; and (2) determine if a 3-credit course on drug abuse would influence attitude change. **Method:** A drug abuse elective was taught in fall to PY-2 students. Course objectives included theories of addiction, patterns of abuse, and addiction treatment. Enrolled student volunteers were surveyed anonymously in the beginning and end of the semester using a validated 50-item questionnaire designed to assess attitudes related to drug use, with items scored on a Likert scale based on published methods (Chappel 1985). PY2 students not enrolled in the elective served as controls, completing surveys during the same time frame. Data were collected using the Qualtrics platform and statistical analysis performed using Prism software. **Results:** A Wilcoxon rank test revealed that students enrolled in the elective held less permissive attitudes towards drug use after completing the course ($n=17, p<0.05$). In contrast, students not enrolled in the elective showed significantly higher permissive attitudes towards drug use at the end of the semester ($n=30, p<0.005$). Groups were similar with regards to previous curricular or extra-curricular exposure to drug abuse and demographic variables. **Implications:** Our results suggest that brief exposure to an active discussion-based drug abuse class can positively modulate attitude change among pharmacy students in their early stage of training.

Prior Exercise Reduces Pro-Inflammatory Cytokines in Skeletal Muscle and Prevents Statin-Associated Muscle Dysfunction in Mice. Kimberly Huey, *Drake University*, Renae J. Chesnut, *Drake University*. **Objectives:** Statins effectively treat hypercholesterolemia with a low overall rate of side effects, the most common being some degree of skeletal muscle myopathy, ranging from soreness to rhabdomyolysis. The likelihood and/or severity of complications may increase with the combination of statins and exercise. However, acclimatization to exercise may prevent statin-associated myopathy due to training-associated reductions in pro-inflammatory cytokines thereby reducing muscle breakdown. We tested the hypothesis that 1 or 3 days of prior exercise protects against statin-associated muscle force

loss and reduces IL-6, TNF α , and IL-1 β levels. **Method:** Mice received daily atorvastatin or saline for 14d, with/without wheel running (RW) (Novel & Sedentary (Sed), respectively) and prior RW groups completed 1 or 3d of RW before saline or statin + RW. Muscle force was measured in vivo. IL-6, TNF α and IL-1 β protein were quantified with ELISA and contractile proteins with myofibrillar assays. **Results:** Statins reduced force in Sed, Novel, and 1d RW groups vs. saline (21, 35, & 21%, respectively), while 3d RW prevented statin-associated force loss. In Novel groups, IL-6 and TNF α were significantly higher with statin compared to saline. In the 3d RW statin group IL-6 and TNF α levels decreased 50% and 65%, respectively, vs. the Novel statin group. IL-1 β levels were not different among groups. Statins were associated with lower contractile protein levels in Sed and Novel groups vs. saline (18 & 26%, respectively). **Implications:** Results suggest 3d prior exercise reduces IL-6 and TNF α compared to novel exercise which may help preserve contractile proteins and prevent statin-associated force loss with exercise.

Relationship between Oxidant Production and Sexual Adverse Effects of Antidepressant Medications. Danielle L. Cruthirds, *Samford University*, Rebekah Bradford, *Samford University*, Marshall E. Cates, *Samford University*. **Objectives:** Antidepressant medications are known to cause sexual adverse effects that affect medication adherence and reduce patients' quality of life. The purpose of this study was to evaluate oxidant production among four classes of antidepressants in order to determine whether a correlation exists between oxidant production and the potential for causing sexual adverse effects. **Method:** This study utilized a superoxide dismutase (SOD) assay in which SOD activity was used as a marker of oxidant production. Representative medications from each class included bupropion (NDRI), amitriptyline (TCA), duloxetine (SNRI), venlafaxine (SNRI) and paroxetine (SSRI). Bupropion possesses the lowest potential for sexual adverse effects, amitriptyline a moderate potential, duloxetine and venlafaxine a high potential, and paroxetine the highest potential to cause sexual adverse effects. Varying relevant concentrations of each antidepressant were used. Antidepressant concentrations were based on established therapeutic serum levels for each medication. Superoxide dismutase activity of each sample was then calculated in order to determine levels of oxidant production by each antidepressant. **Results:** Paroxetine exhibited the greatest change in SOD activity followed by amitriptyline, bupropion, duloxetine and venlafaxine. Higher concentrations of bupropion, duloxetine, venlafaxine and paroxetine produced dose-dependent increases in SOD activity, whereas SOD activity remained stable at various concentrations of amitriptyline. **Implications:** Results from this study show a correlation likely exists between oxidant production and propensity for antidepressant-induced sexual adverse effects, with the exception of the serotonin-norepinephrine reuptake inhibitor class (duloxetine and venlafaxine). These results suggest multiple mechanisms are likely responsible for antidepressant-induced sexual adverse effects, one of which being increased oxidant production.

Sharing Success: Expansion of a Tutor-run Assessment Method to Multiple Courses and Colleges. Melinda Lull, *St. John Fisher College*, Ashley N. Castleberry, *University of Arkansas for Medical Sciences*, Jennifer L. Mathews, *St. John Fisher College*, Sarah Thornton, Ryan McKelvie, *Wegmans School of Pharmacy*. **Objectives:** In 2014, data were presented on a successful pilot program using quizzes written by tutors in a single course at Wegmans School of Pharmacy. The objective of this study was to use the methods from the pilot to expand the program to other pharmacology courses at Wegmans School of

Pharmacy as well as the University of Arkansas for Medical Sciences College of Pharmacy. **Method:** Methods from the previous study were replicated, whereby tutors wrote weekly quizzes administered using ExamSoft®. The optional quizzes were openly accessible to students in preparation for course exams. Performance data were collected from students in one course at each institution and compared to the pilot study. Performance data collected included quiz and course exam scores. All students that utilized quizzes, as well as tutors, were surveyed to assess perceptions of the method. **Results:** The use and impact of quizzes was similar to the results in the pilot study. However, the magnitude of improvements was slightly lower than what was observed initially. Exam scores were significantly higher than quiz scores on 6/10 exams measured, compared to 5/5 exams in the pilot. Students who utilized the quizzes performed significantly better than those that did not on 3/10 exams (3/5 in the pilot), and earned significantly higher course averages. Student (n=155) and peer instructor (n=13) feedback remained positive after expansion of the program. **Implications:** This method is a tool that can be translated to different courses and different institutions with a valuable impact on student performance.

Student Perceptions of Changes Made to a Basic Science Laboratory Course to Promote Curricular Integration. Brian Train, *Marshall University*, Nicole Rockich-Winston, *Marshall University*, Christopher Gillette, *Marshall University*, Glenn Anderson, *Marshall University*. **Objectives:** The Integrated Laboratory II course is a basic science laboratory designed to integrate the basic science curriculum primarily from the first professional year of PharmD training. The objective of this study was to assess whether changes made to the course improved integration as perceived by student's agreement that the concepts and skills learned in previous basic science courses were applied in the laboratory experiments. **Method:** Eight of the 13 laboratory exercises in this course were changed prior to implementation in the Fall 2015 semester. This study surveyed P2 and P3 students who took the Integrated Laboratory II course in Fall 2015 and Fall 2014, respectively, using a five-point Likert scale. Students were asked how much they agreed or disagreed on whether changes made to the course improved integration. The Wilcoxon-Mann-Whitney test was used to analyze the data. **Results:** A total of 118 students completed the survey. Twenty-one of the 27 questions in the survey demonstrated a statistically significant difference between the student populations ($p < 0.001$). The P2 students were significantly more likely to agree that the laboratory exercises enhanced the concepts learned in the previous basic science courses, compared to the P3 students. **Implications:** The changes in the laboratory exercises were successful in complementing the main concepts and skills emphasized in the basic science curriculum. The laboratory exercises were well received in the first year of implementation and further fostered positive attitudes towards pursuing basic science research opportunities.

Students Teaching Students! An Interprofessional Global Health Course and Capstone Student-Led Case Conference. Sigrid C. Roberts, *Pacific University Oregon*, David Fuentes, *Pacific University Oregon*, Saje Davis-Risen, *Pacific University School of Physician Assistant Studies*, Nancy Cicirello, *Pacific University School of Physical Therapy*, Laura Dimmler, *Pacific University School of Healthcare Administration*, Viktoria Keetay, *Pacific University School of Audiology*, Nancy Krusen, *Pacific University School of Occupational Therapy*. **Objectives:** To meet the growing demand for global health education through innovative student-centered strategies, taking advantage of the strength of interprofessional skill sets intrinsically represented in our diverse College of Health Professions programs. **Method:** The Introduction to Global Health course is part of a new interprofessional

global health series created at the college level to replace school level global health elective courses previously taught in silo. The course focuses on public health and social determinants of diseases and is delivered as several blended face-to-face/online modules. A final professional and innovative integration activity, for which students designed and implemented an interprofessional case conference facilitated synthesis of information. Students developed two case vignettes, guiding questions, learning objectives, and a presentation on traumatic brain injury. **Results:** Pre- and post-course surveys assessed students' perception and learning. Together, the assessments showed that students gained improved understanding and appreciation of global health and interprofessional care and felt better prepared to function as global citizens. In addition, pre- and post-event surveys were given to the approximately 100 student from different professional health care programs that attended the interprofessional case conference. Survey results demonstrated a substantial increase in perceived knowledge base, positive attitudes, and interprofessional skills regarding global health and traumatic brain injury. **Implications:** Our Global Health elective course successfully addresses a growing need for interprofessional global health education. In addition, our approach of using a student-led capstone project endorses the value of student-centered learning.

Students' Preference and Perspective on Interactive Learning Strategies Employed in a Biomedical Science Course. Yuan Zhao, *Sullivan University*, Myhanh Nguyen, *Sullivan University*, Trang Bui, *Sullivan University*. **Objectives:** To evaluate students' preference and perspective on different interactive learning strategies employed in an immunology course in PY1 curriculum. **Method:** Interactive learning activities incorporating TurningPoint (an audience response system), case studies, think-pair-share and team-based learning were designed and delivered throughout an immunology course. A questionnaire surveying students' preference on different types of interactive learning tools and perspective on the effectiveness of these strategies in improving their critical thinking skills, motivation/interest in learning, and learning outcomes was administered at the end of the quarter. All the statistical analyses were conducted in Microsoft Excel. **Results:** 85 (100%) PY1 students enrolled in immunology course participated in the survey. Among all the interactive learning activities employed in the course, TurningPoint was ranked the favorite format by students (82.4%) and best increased their interest and motivation in learning (88.2%), and most helpful in improving the test scores (90.59%), followed by case study, think-pair-share, and team-based learning. TurningPoint and case study were ranked similar (42.4% vs. 41.2%) in best enhancing critical-thinking and problem-solving skills. Students agreed (including strongly agreed) that interactive learning activities benefited their learning process (89.4%), improved their knowledge in immunology (85.9%), and improved their overall test scores (71.76%). Overall, 98.5% of students recommended or strongly recommended employing interactive learning activities in this course for future classes. **Implications:** The data demonstrate a positive feedback on interactive learning activities and preference on interactive learning tool by students in learning a biomedical science course. These insights provide valuable information for future improvement of instructional strategy.

The Crossover Experience: An Integrated Approach to Making Cross-Disciplinary Connections in Pharmacy Curriculum. Patti W. Adams, *South University*, Vicky Mody, *Philadelphia College of Osteopathic Medicine*, Tracey Meade, *South University*, Andria Fetterman, *South University*, Kelly J. Clark, *South University*, Adegoke Adeniji, *South University*, Mostafa Elgebaly, *South University*, Karyn I. Cotta, *South University*. **Objectives:** Completion of minimum required science prerequisites may not sufficiently prepare

all matriculating pharmacy students for the level of understanding required to make deeper connections across science disciplines. Hence, we implemented “Crossover Learning Experience” (CLE) to emphasize relationships among science disciplines by requiring students to use a multidisciplinary approach to address higher-order problems. We hypothesized that CLE would improve students’ ability to solve higher-order problems as indicated by increased scores on higher-order assessments. **Method:** Multidisciplinary faculty experts collaboratively generated a case-based assignment and two quizzes for each CLE, and provided feedback during discussion sessions. Quizzes contained either knowledge/understanding-level questions (control) or application/higher-level questions (HO). Quarter-1 students were sorted into assessment groups A or B based on pre-pharmacy cumulative GPAs. Performance equality of groups was confirmed by comparing mean group scores on a baseline assessment administered to each student in week 1 (t -test, $p=0.36$). Groups A and B were further subdivided into work groups (8-10 students) for completion of assignments. Students were administered two CLEs, each consisted of (chronologically): a pre-quiz, disease-based group assignment, student-led discussion session facilitated by multidisciplinary faculty panel, and a post-quiz. For assessment, one group completed control pre-quiz and the other completed HO pre-quiz. For post-quizzes, control and HO quizzes were administered to opposite groups. Mean group performance on pre- and post-quizzes for each quiz type was compared. **Results:** In each CLE, student HO post-quiz scores were significantly higher than HO pre-quiz scores (t -test, $p<0.05$). **Implications:** CLE improved students’ ability to solve higher-order problems.

The Outcome Impact of a Six-Week Pipeline Program Leading to Pharmacy Education. Deborah Williams, *Touro College of Pharmacy-New York*, Thomas J. Cook, *Touro College of Pharmacy-New York*, Bardia Askari, *Touro College of Pharmacy-New York*, Katherine K. Knapp, *Touro University California*, Joseph Indelicato, *Touro College School of Health Sciences*, Cheryl Evans, *Globalscope*. **Objectives:** The Touro College of Pharmacy (TCOP) Six-Week Pipeline Program provides a comprehensive review of topics covered in the first year PharmD curriculum. Program participants experience an intense curriculum focused on the basic medical sciences. The program format included small class-size setting, hybrid online lectures, weekly question/answer, compounding assessment and group activities. The curriculum was delivered by faculty from TCOP, New York Medical College, advanced TCOP students and educational consultants. Successful completion of the 6-week program (grade of “B” or better) led to acceptance into TCOP PharmD degree program. Program Objectives: 1. To provide academic enhancement for entry into the PharmD program. 2. To provide a comprehensive review of the basic medical sciences. 3. To provide a seamless transition for pipeline students into the PharmD program. **Method:** A preliminary, controlled observational study was performed to evaluate the program. We compared immediate outcomes of fall semester grades of the pipeline students to first-year pharmacy students. **Results:** When total grade point averages were calculated, the pipeline program participants performed as well as the Class of 2019 (2.66 ± 0.4 vs 2.48 ± 0.95 , $p=0.1950$, pipeline vs class of 2019, respectively). **Implications:** The preliminary study provides evidence that the early objectives of the program, achievement of satisfactory academic performance and consistent academic performance are being met. However, the immediate outcomes of fall semester grades for the pipeline participants indicate a need for longitudinal study.

Using Pharmaceutical Sciences Principles to Solve Therapeutics Problems – Teaching Connections Through Quizzing. Teresa M. Seefeldt, *South Dakota State University*, Jane R. Mort, *South Dakota State University*. **Objectives:** Students in health professions programs often have difficulty seeing the connections between basic science concepts and clinical applications. The objective of this project was to evaluate pharmacy students’ ability to solve therapeutic problems by recalling and applying pharmaceutical sciences principles, with and without prompting. **Method:** Students enrolled in a second-year pharmacotherapeutics course completed an online quiz consisting of four clinical problems related to Parkinson’s disease. The quiz was administered prior to classroom work but could be answered using previously learned basic sciences concepts. The format of the quiz consisted of the clinical question followed by 1-2 prompting questions to help students recall the pharmaceutical sciences principles. Then the clinical question was asked again. **Results:** 76 students (95%) completed the activity. The percentage of students answering the initial questions correctly ranged from 20-67%. For 3 of the 4 clinical questions, the percentage answering correctly after the prompting questions was significantly higher ($p<0.05$) compared to the initial question (improvements from 38% to 58%, 20% to 46%, and 36% to 82%). Conversely, the percent correct on the fourth clinical question was the same on the initial and final questions (66%) despite 89-95% of the students answering the prompting questions correctly. 92% stated that the activity helped them see the importance of pharmaceutical sciences content and the application to problem solving. **Implications:** In most cases, prompting helped students solve therapeutics problems and recognize the importance of pharmaceutical science information. This information may guide educational approaches connecting pharmaceutical science principles to therapeutic problem solving.

Theoretical Models

Comprehensive Self-Study for 8-Year Accreditation: The Feik School of Pharmacy Model. Lila P. LaGrange, *University of the Incarnate Word*, Arcelia M. Johnson-Fannin, *University of the Incarnate Word*, Renee Bellanger, Adeola O. Coker, *University of the Incarnate Word*, Bradi L. Frei, *University of the Incarnate Word*, Cheryl K. Horlen, *University of the Incarnate Word*, Anita T. Mosley, *University of the Incarnate Word*, Sushma Ramsinghani, *University of the Incarnate Word*, Donald Sikazwe, *University of the Incarnate Word*, Elizabeth M. Urteaga, *University of the Incarnate Word*, Amy P. Witte, *University of the Incarnate Word*, Alejandra Zertuche, *University of the Incarnate Word*, David F. Maize, *University of the Incarnate Word*. **Objectives:** The School engaged in a 2-year self-study for continuation of accreditation. A process was designed to deliver an organized, comprehensive, and transparent report with broad-based input from stakeholders. **Method:** The self-study committee developed a timeline and process using the 6 areas outlined by ACPE. Subcommittees were formed in fall 2013 to ensure participation by faculty (100%), staff, students, and external stakeholders. Subcommittees analyzed the accreditation standards and guidelines to assess the School’s compliance. Where necessary, recommendations were made to appropriate entities to resolve issues. In fall 2014, subcommittees wrote narratives for each standard using focused questions in the accreditation Self-Assessment Instrument. In spring 2015, the committee reviewed the narratives and completed the Self-Assessment Checklist for each standard. Drafts were made available on Blackboard®. A mandatory school retreat was held in May 2015 for faculty and staff and included representatives from students, preceptors, advisory board members, and university administration to discuss, comment, and vote on each standard for compliance. Edits were made based

on retreat comments and the final report was available in August 2015. Information about the self-assessment was disseminated to students at class meetings and to the public through poster presentations. **Results:** The School received commendation by ACPE in all 6 areas of the self-study process. **Implications:** The self-study process ensured that all internal and external stakeholders were involved in assessing the status of the program. It helped correct deficiencies and imparted a deeper understanding of pharmacy education today. The process can serve as a model for other programs.

CHEMISTRY

Completed Research

Creating a Comprehensive Exam to Prepare Students for the PCOA. Andrew Coop, *University of Maryland*, Lisa Lebovitz, *University of Maryland*, Shannon R. Tucker, *University of Maryland*, George Anagnostou, *University of Maryland*, Christopher Klimas, *University of Maryland*, Richard N. Dalby, *University of Maryland*. **Objectives:** The objectives were to provide Maryland pharmacy students with the experience of a comprehensive examination similar in length and content to the national PCOA. **Method:** We constructed a 225-question comprehensive exam in ExamSoft using previously tested questions written by Maryland faculty within predetermined ranges of point biserial correlation and p value item difficulty, screened for high level concepts rather than lecture specific details, then tagged and apportioned content according to the PCOA blueprint. **Results:** The internal assessment was created to mirror the national PCOA, allowing an internal assessment of the curriculum and also to identify areas of strength and weaknesses by individual students as a practice for the national PCOA. **Implications:** Results on the practice exam will be assessed to student performance on the national PCOA, and performance on the pharmacist licensing examination (NAPLEX) after graduation the following year. These assessments will guide data-led improvements in both PCOA preparation and the curriculum as a whole.

Design, Synthesis, and Cannabinoid Receptor Activity of Benzofuran Ligands. Eric Bow, Mariah L. Cole, *University of Mississippi*, John M. Rimoldi, *The University of Mississippi*. **Objectives:** The endocannabinoid system is a complex homeostatic signaling system controlled through the actions of two G-protein coupled receptors, cannabinoid receptor 1 (CB1) and cannabinoid receptor 2 (CB2). The expression of CB2 affords a pharmacological basis for the immunomodulatory effects of cannabis, providing a potential therapeutic target for the treatment of diseases involving immune function. Our objectives were to employ natural product cannabinoids as scaffolds for the design, and ultimate synthesis and evaluation of new small molecule chemotypes as selective modulators of CB2 activity. **Method:** We utilized a natural product THC analog (10a-OH THC) as a scaffold in the design of novel synthetic cannabinoid receptor ligands. We conceived and implemented four synthetic routes for the synthesis of target molecule libraries. Thirty-five new analogs were synthesized representing two scaffolds (2-methylene-2,3-dihydrobenzofuran-3-ol and benzofuran). The target molecules were purified, structurally characterized, and submitted for in vitro evaluation using our in house CB1/CB2 radioligand displacement assay. **Results:** Structure-activity relationship analysis from 35 target compounds synthesized and screened revealed 19 active hits in the CB1/CB2 radioligand displacement assay (>70% displacement @ 10 μ M). The most potent and selective compound identified exhibited a 78 nM affinity at CB2 with a 28-fold selectivity for CB2/CB1. **Implications:** The synthetic analogs described herein serve as lead

molecules for further synthesis and optimization of cannabinoid receptor activity, potentially representing new drug leads for CB2 receptor-targeted therapeutics.

Development of Comparable Multidisciplinary Surveys to Sensitize Healthcare Providers in Delivering Care to Diverse Populations. Naser Z. Alsharif, *Creighton University*, Mark V. Siracuse, *Creighton University*, Thomas L Budesheim, Karen Paschal, Amy Abbott, Shirley Blanchard, Ted Kaufman, Greg Jarding. **Objectives:** Development of comparable multidisciplinary surveys to sensitize healthcare providers in delivering care to diverse populations. **Method:** We have developed a survey tool with five sections (Demographics, Factual Knowledge, Attitude, Behavior/Practice and Patient Population) over 8 months to evaluate pharmacists', nurses', occupational therapists' and physical therapists' attitudes and behaviors in delivering services to diverse populations. Items for the survey were developed based on literature review from all the respective healthcare professions; addressing attitudes and behaviors indicative of the elements of the cultural proficiency continuum; identifying elements of cultural competence; address unique factors impacting patient care (e.g. family, religion, perception of provider care, traditions, and socioeconomic standing, etc.) and causes of health care disparities. The survey was administered to a total of 98 professionals. For each profession, two focus groups and one on one interviews with 8 participants were conducted. All participants received a four week follow-up survey. **Results:** The qualitative responses demonstrated cultural sensitivity by participants and resulted in modifications of several questions. The quantitative results indicated statistically significant differences in medians for 4 items out of 37 responses across 4 professions. Follow-up survey analysis to be completed. **Implications:** As more and more healthcare providers recognize the need to address their knowledge, attitudes and behaviors when dealing with patients in general and those from diverse populations, the potential for decreasing healthcare disparities and negative outcomes for patients will be improved.

Discovery of Antischistosomal Drug Leads Based on Macrocyclic Polyamine Derivatives and Their Metal Complexes. M. Omar F. Khan, *Marshall University*, Jennifer Keiser, Timothy J Hubin. **Objectives:** Praziquantel (PZQ) is the only widely available drug to treat schistosomiasis, which has developed resistance in many cases, requiring the identification of new anti-schistosomal drug. A traditional screening approach of 98 synthetic macrocyclic polyamine derivatives and their metal complexes allowed to discover new drug leads against this disease. **Method:** The compounds synthesized and characterized were screened applying phased screening program, firstly against newly transformed schistosomula (NTS) of harvested *S. mansoni* cercariae (Liberian strain), then adult worms created in female NMRI mice, and finally in vivo using mice model of *S. mansoni*. **Results:** At 33 μ M concentration, a total of 13 compounds inhibited the growth of NTS at 61% to 100% level, which were tested at 10 μ M concentration against the NTS. Five of these showing 100% inhibition were selected for further screening for IC50 determination against both NTS and adult worms. Against NTS, all these 5 compounds showed IC50 values comparable to that of standard drug PZQ (0.81 to 0.95 μ M vs 0.9 μ M for PZQ). Three of these, which are bisquinoline derivative of cyclen and its Fe²⁺- and Mn²⁺-complexes, showed strong growth inhibition at 10 μ M (100%, 100% and 87.5%, respectively) and micromolar IC50 values (1.62 μ M, 1.34 μ M and 4.12 μ M, respectively vs 0.1 μ M for PZQ) against the adult worms. In vivo (400 mg/kg), the worm burden reduction in female mice were 12.3%, 88.4% and 74.8%, respectively. **Implications:** The Fe²⁺-complex

exhibited the activity in vivo comparable to that of PZQ showing the discovery of a novel drug lead for schistosomiasis.

Evaluation of the Physicochemical Properties of a Novel Antimalarial Drug Lead, Cyclen Bisquinoline. Mohammad F Hossain, Hardeep S. Saluja, *Southwestern Oklahoma State University*, M. Omar F. Khan, *Marshall University*. **Objectives:** The objective of this study was to evaluate physicochemical properties of a novel antimalarial drug lead, 4,10-bis (7-chloroquinoline)-1,4,7,10-tetraazacyclododecane (free base; FB) and its HCl salt. **Method:** Differential scanning calorimeter was employed to determine the phase transition and conformational changes. Equilibrium solubility and stability of both FB and its salt were carried out in different mediums, and samples were analyzed using reverse phase-high performance liquid chromatography (RP-HPLC); and pKa values were determined by RP-HPLC and UV spectrophotometry. The log P value of the compound was determined by RP-HPLC. **Results:** The FB is a white polymorphic crystalline powder (m.p. 166°, 178° 195°, and 234°C, respectively), while the salt is an off-white amorphous powder showing a broad endotherm in DSC analysis. The solutions of both forms were stable in acid (0.1M HCl, pH 1.0 buffer), base (0.1M NaOH, pH 12.0 buffer) and water, but unstable in 0.3% H₂O₂. The solid forms were stable in light, and heat (60°C). Two pKa values, 8.3 and 8.8, were obtained for the compound. It has a log p-value of 5.14. The equilibrium solubility order of the FB is: DMSO > ethanol > pH 1 > isopropyl alcohol > tween 80 > propylene glycol > PEG 400 > water > pH 4.5 > pH 7.4 > pH 9.0 > pH 12.0; and that of salt is: water > propylene glycol > DMSO > ethanol > PEG 400. **Implications:** All these properties would be useful in implementing the modern quality by design (QbD) approach for further development of the drug lead.

Examination of the Surface Tension of Various Oral, Nasal, and Ophthalmic Dosage Forms. Ronny Priefer, *Western New England University*, Kimberly Han, Osakpolor E Woghiren. **Objectives:** Surface tension, at the surface-to-air interface is a physico-chemical property of liquid pharmaceutical formulations that are often overlooked. To determine if a trend between surface tension and route of administration existed, a suite of oral, nasal, and ophthalmic drug formulations were analyzed. **Method:** Surface tension at the surface-to-air interface was measured at room temperature in sextuplicate using a surface tensiometer (CSC-DuNOÜY, Central Scientific Co, Inc) with a 6 cm platinum tensiometer ring (Thomas Scientific). **Results:** The surface tension at the surface-to-air interface of the oral formulations studied were in or above the range of the surface tension of gastric, duodenum, and jejunum fluids. The range of surface tensions for oral formulations were 36.6-64.7 dynes/cm. Nasal formulations had surface tensions below that of the normal mucosal lining fluid with a range of 30.3-44.9 dynes/cm. Ophthalmic OTC formulations had the largest range of surface tensions at the surface-to-air interface of 34.3-70.9 dynes/cm; however, all formulations indicated for treatment of dry eye had surface tensions higher than that of normal tears, while those for treatment of red eye had surface tensions below. **Implications:** Surface tension at the surface-to-air interface of liquid formulations is dependent on the route of administration, environment at site of introduction, and for ophthalmics, what the formulation is indicated for.

Examining “Neighboring Group Effects” on Student Learning in Pod-style Classrooms in a First-year Biochemistry-based Course. Sridhar Anand, *St. John Fisher College*, Kathleen M Donovan, *Department of Political Science and Legal Studies, St. John Fisher College*, Sean T Leonard, *Wegmans School of Pharmacy, St. John Fisher College*. **Objectives:** Investigating the influence of (a) immediate neighbor(s) and (b) the table group on a student’s final course grades

in pod-style classrooms **Method:** The subject classroom uses a pod-style seating for 86 students enrolled in a first-year pharmacy biochemistry-based course. Students chose their own seats and remained there for the course duration. Ten tables (#1-10) seat upto nine students, and one table (#11) seats upto six students. Students were assigned unique location codes. Test scores on three unit exams and the final exam were used. Measurements were done by controlling for each of the unit exams. Standard statistical analyses were run, including regression analysis, to examine the influence of neighbors and tables on an individual’s final grade. The two-tailed test with $p < 0.10$ was used for all analyses. **Results:** In predicting the final course grade as a function of neighbor’s grade, there was a statistically-significant positive correlation with neighbors’ grades among students in the front, $r(84) = 0.14$, $p < 0.10$ but a significantly negative correlation among students in the back of the classroom, $r(84) = -0.11$, $p < 0.10$. A regression analysis revealed that table assignment accounts for about 4% of the total variance in final course grades. Other slight, table-specific differences were noted in post-hoc comparisons. **Implications:** Pod-style classrooms are used for both didactic and team-based learning. Our initial analyses reveal statistically significant results, suggesting that student proximity within a pod-style classroom may have a slight impact upon learning outcomes. Further investigations on how these layouts affect student learning are warranted.

Improving Learning with Acid/Base Demonstration Videos. Tyler M. Rose, *Roseman University of Health Sciences*. **Objectives:** Improve P1 student understanding of the 1) opposing effects of a weak acid and its conjugate base, 2) acidifying effects of carbon dioxide on blood pH, and 3) resistance of a buffered solution to changes in pH. **Method:** Three demonstration videos were created and presented in class. Videos showed how the color of a dilute, pH-indicating cabbage extract was affected by 1) the addition of acetic acid versus sodium acetate, 2) exhaled air, and 3) exhaled air after a bicarbonate buffer system had been set up. Following the quiz and assessment, student opinions were collected on the effectiveness of the videos and quiz results were compared to those of previous years. **Results:** Eighty-eight percent of student respondents ($n = 50$ of 107) felt the videos improved their understanding of acid/base chemistry. Of those who did not, the main reason given was that the lecture and slides were all they needed to understand the concepts. While the overall mean score on the 17-question quiz declined by 1.4% from 2013 to 2015, the mean score for five specific quiz questions with learning outcomes related to those of the demonstration videos increased by over 6%. Without the videos, the mean score for these same five questions decreased from 2011 to 2013. **Implications:** Videos demonstrating pH concepts relevant to pharmacy were received well by P1 students and appeared to improve learning of the material.

In Search of Novel and Effective Drug Candidates for the Management of Tuberculosis. Jozef Stec, *Marshall B. Ketchum University*, Shichun Lun, *Johns Hopkins School of Medicine*, Haidan Guo, *Johns Hopkins School of Medicine*, Catherine Vilchèze, *Albert Einstein College of Medicine*, William R Jacobs Jr., *Albert Einstein College of Medicine*, William R Bishai, *Johns Hopkins School of Medicine*, Alan P Kozikowski, *University of Illinois at Chicago*. **Objectives:** Mycobacterium tuberculosis (Mtb) is the main causative agent of tuberculosis (TB), a highly contagious and insidious disease. With an estimated 9.6 million new TB cases and approximately 1.5 million deaths due to TB in 2014, this disease remains one of the global major health problems and it is currently ranked to be the second leading cause of mortality due to infectious disease worldwide. Accordingly new, safe and effective medications are urgently

needed to successfully fight TB. We designed, synthesized, and evaluated for antitubercular activity a series of diverse small organic molecules. **Method:** All molecules were design and synthesized by using traditional synthetic medicinal chemistry approach. After purification and full spectral characterization, the obtained compounds were evaluated in microbiological assays for activity against *Mycobacterium tuberculosis* strain H37Rv. The triclosan-based compounds were evaluated in the MTT assay according to the published procedure (Int. J. Tuberc. Lung Dis. 2005, 9, 901–906) whereas the benzofuran- and indole-based compounds were evaluated using the microplate alamar blue assay with a fluorescence microplate reader at 544 nm ex/590 nm em as described previously (Antimicrob. Agents Chemother. 1997, 41, 1004–1009). The cytotoxicity assay of those compounds was performed on Vero cells. **Results:** Several compounds turned out to be highly potent against both drug-sensitive and drug-resistant Mtb strains. The most active compounds had minimal inhibitory concentration (MIC) values in submicromolar range and displayed high selectivity indices (SI). **Implications:** Overall, these studies provide several novel drug candidates for further research aimed at developing new medicines effective against TB.

Incorporating Statistics Modules into the PharmD Curriculum: Impact on Student Learning. Mustapha A. Beleh, *University of Michigan*, Burgunda V. Sweet, *University of Michigan*. **Objectives:** In-house data suggested that students were entering our PharmD program with deficiencies in their statistical knowledge. The purpose of this study was to identify these deficiencies, develop online learning modules to address deficiencies, and assess their effectiveness for improving student understanding and retention of statistical concepts. **Method:** Second-year pharmacy students (P2) completed an assessment to establish a baseline score for their knowledge of basic statistical concepts. Six online learning modules, each covering a different statistical concept, were developed and incorporated into P2 courses. A post-module assessment was then completed by each student. These scores were compared to baseline scores to determine improvements in performance. Long-term knowledge retention was measured by re-administering the assessments one year later, to third-year (P3) students. **Results:** The initial assessment uncovered knowledge deficiency in all six areas tested. There was a significant increase in P2 post-module assessment scores compared to baseline scores for each of the modules ($p < 0.001$). Re-assessment scores from the P3 year remained significantly higher than baseline scores, supporting the benefit for both short- and long-term learning. Struggling students saw the greatest benefit. Student satisfaction with the modules was high with 84% noting the content was relevant to their education and 74% indicating the modules were an effective active learning technique. **Implications:** Self-study statistics modules incorporated into existing coursework are an effective means of addressing knowledge deficiencies and enhancing student understanding of basic statistical concepts. Students viewed the modules as an effective means of identifying and remediating statistical knowledge deficiencies.

Second Phase of Development of an Educational Tool/Mobile Platform for Biochemistry in the Pharmacy Curriculum. Tatjana Petrova, *Chicago State University*, Melany Puglisi-Weening, *Chicago State University*, Tauseef Salim, *Chicago State University, College of Pharmacy*, Nuttika Estvander, *Chicago State University, College of Pharmacy*. **Objectives:** Biochemistry is an important component of pharmacy education. Core topics in the course are essential to understanding the endogenous targets for drug therapy and the rationale for drug design. In the first phase of the study, students were asked to identify topics that are most challenging in the biochemistry course, and study tools as supplemental material for incorporation into a mo-

bile application. Students requested practice quizzes, animation, flash cards, and 3D structures as supplemental study tools. The objectives of second phase of the study were to develop the content for a mobile application and establish the validity of that content. **Method:** A forty-item questionnaire with representative content was sent to a panel of experts for formal feedback (assuring face and content validity). The questionnaire was sent to twelve experts and five provided feedback. The process of establishing face and content validity occurred in one round of expert panel revision. Based on the expert panel feedback, items were retained, removed, or modified in order to develop accurate content that would serve as a foundation for the application. **Results:** Responses from five experts indicated that 75% of the items were acceptable, 22.5% required minor editing, and 2.25% of the items were removed. In order for an item to be considered acceptable, a minimum of 75% agreement from the experts was required. **Implications:** The validated items will be used as a foundation in the process of developing and generating the practice quizzes, animation, flash cards, and 3D structures (supplemental study tools) for the mobile application.

Stability of Compounded Pyrimethamine Oral Suspension Stored at Room and Refrigerated Temperature. Stacy Brown, *East Tennessee State University*, Jessica Huffman, *East Tennessee State University*, Amanda Ogle, *East Tennessee State University*, Paul Lewis, *Johnson City Medical Center*. **Objectives:** Pyrimethamine is an anti-malarial drug that is commonly used to treat *Toxoplasma gondii* infections in HIV-positive patients. Access to pyrimethamine tablets has been complicated by supply issues. This research aimed to use a stability-indicating high performance liquid chromatographic (HPLC) method with ultra-violet (UV) detection for the beyond-use date determination of an oral suspension compounded from a bulk pyrimethamine powder and stored in amber bottles at room and refrigerated temperatures. **Method:** Pyrimethamine, USP was obtained as a bulk powder from Medisca Inc. Six 100-ml batches of pyrimethamine (2 mg/ml) oral suspension were prepared in an ORA-Plus®/ ORA-Sweet® vehicle. The compounds were mixed in plastic amber bottles, with triplicate bottles stored at room temperature and in a laboratory refrigerator. Concentration of pyrimethamine was monitored in the preparations over a 30-day period using HPLC with UV detection at 280 nm. **Results:** The concentration of pyrimethamine in all samples of the compounded oral suspensions remained within 90 – 110% of label claim throughout the 30-day study. Additionally, the HPLC-UV method met stability-indicating criteria set forth in USP General Chapter <1225>. **Implications:** These data indicate that pyrimethamine can be compounded in a 2 mg/ml oral suspension using ORA-Plus®/ORA-Sweet® and stored at room or refrigerated temperature for at least 30 days. This research could allow hospitals to offer a lower-cost alternative to patients unable to swallow solid doses or who are unable to acquire Daraprim® tablets in a timely manner.

Synthesis and Antimicrobial Evaluation of Potentially Non-nephrotoxic 3'-C-Puromycin Analogs. Giuseppe Gumina, *Presbyterian College*, Josh Carter, *Presbyterian College School of Pharmacy*, Amy Messersmith, *Presbyterian College*, Brent D Feske, *Armstrong State University*. **Objectives:** Multi-drug resistant microorganisms are responsible for life-threatening infections that result in treatment failure, higher health care expenditures and greater risk of death. In search of novel antimicrobial agents active against multi-drug resistant microorganisms, we designed, synthesized and evaluated two puromycin analogs that cannot be converted to a characteristic nephrotoxic metabolite of the parent molecule. **Method:** The synthetic strategy toward the target molecules involved a multi-step procedure

based on a Horner–Wadsworth–Emmons olefination followed by a stereoselective hydrogenation. Antimicrobial activity of the synthesized compounds was evaluated against *Staphylococcus epidermidis* and a multi-drug resistant *Staphylococcus aureus* (MRSA) strain by an MIC assay using puromycin as positive control. **Results:** In our antimicrobial assay, puromycin had MIC of 24 and 12 micrograms/mL against MRSA and *S. epidermidis*, respectively. One analog had MIC of 88 and 44 micrograms/mL, respectively. The other analog did not show significant antimicrobial activity against either strain. Unfortunately, the active analog was not chemically stable. **Implications:** We expanded the known structure-activity relationships of puromycin by synthesizing modified analogs that cannot be converted to a characteristic nephrotoxic metabolite. One of our molecules showed puromycin-like activity, but was not chemically stable. The other was chemically stable but devoid of antimicrobial properties. The knowledge gained from this project is currently being used to optimize our leads.

CONTINUING PROFESSIONAL EDUCATION Completed Research

Are You Game for Fun, Interactive Learning? Jerika T. Lam, *Chapman University*, Jeffery A. Goad, *Chapman University*, Lisa Sparks, *Chapman University*, Larisa Odessky. **Objectives:** 1) To evaluate the perceptions of virtual communication and teamwork among students via participation with Mimycx. 2) To evaluate the challenges associated with virtual communication and teamwork encountered by students while participating with Mimycx. **Method:** The study design was prospective and educational. Seventy-nine first year pharmacy students participated in a Mimycx quest called “Retched Rave” in the Healthcare Communication course. In class, students were randomly assigned into teams and worked together to complete the quest game. Students voluntarily completed the pre- and post-quest questionnaires via Qualtrics. **Results:** Quest participation was 100% ($n = 79$). Completion of the pre-quest questionnaire (8-item) was 92.4% ($n = 73$) and the post-quest questionnaire (15-item) was 97.5% ($n = 77$). The questionnaires included student demographics, items related to knowledge about virtual team-based learning, perceptions about game simulations for education, and attitudes towards using game simulations to enhance communication and teamwork. Majority of students considered themselves adaptable to new styles of learning tools (88.3%). There was no difference in their perceptions about virtual healthcare game environments improving their communication and teamwork skills before and after playing the quest. This was mostly attributed to several technological challenges that students experienced with the software. Half of the students perceived Mimycx positively and did not view it as a difficult, new learning tool. **Implications:** Mimycx can be a fun learning tool for pharmacy students despite the technological challenges. The quest content and focus of using Mimycx in another pharmacy course needs to be further explored to determine its applicability and usefulness outside of interprofessional education.

Evaluation of the New Science of Learning Program in a College of Pharmacy. Jacob P. Gettig, *Midwestern University*, Jennifer Phillips, *Midwestern University*, Medha Joshi, *Midwestern University*, Jennifer L. Mazan, *Midwestern University*, Susan Cornell, *Midwestern University*, Timothy J. Todd, *Midwestern University*. **Objectives:** To evaluate the effect of the book “The New Science of Learning” (NSL) and faculty-developed NSL workshops on first-professional year (P1) pharmacy students. **Method:** Faculty developed NSL workshops

about sleep/exercise, paying attention, using patterns and multiple senses, memory, and mindsets. P1s received the book and baseline survey (T0) during orientation. They subsequently participated in NSL workshops during their first two weeks of school and received a follow-up survey (T1) at the end of the last workshop. Second-professional year (P2) students, the control group, received a survey during their first week of class (T0). The paper surveys contained 52 Likert-type items that measured self-efficacy (SE) (18), perceived knowledge (6), expected use of NSL strategies (10), and value of workshops (18). Seventeen multiple-choice items measured NSL knowledge. **Results:** Survey response rates were: P1: T0 113/206 (54.9%), T1 179/200 (89.5%); P2: T0 165/181 (91.2%). P1s valued the workshops demonstrated by their positive responses to 15/18 value items. There were no statistical differences in baseline total SE or knowledge between P1s (T0) and P2s (T0), but after the NSL workshops (T1), P1s’ knowledge was statistically greater than P2s’. P1s were statistically more likely to propose using NSL strategies in their forthcoming learning than P2s. In a paired analysis of P1s, SE significantly decreased from T0 (mean 91.7/108) to T1 (mean 89.6/108) and knowledge increased from T0 (mean 8.8/17) to T1 (mean 11.9/17). **Implications:** An educational intervention centered on the NSL book was well-received by P1s, and P1s’ knowledge of NSL concepts increased post-intervention.

Examining the Effect of a Continuing Professional Development Activity on Pharmacists’ Knowledge, Skills and Self-efficacy. Eric C. Buxton, *University of Wisconsin-Madison*, Ruth H. Bruskiwitz, *University of Wisconsin-Madison*, Karen Kopacek, *University of Wisconsin-Madison*. **Objectives:** Inadequate counseling may lead to poor adherence in patients with respiratory disease. This study was designed to examine the effectiveness of a professional development activity on pharmacists’ knowledge, skills and self-efficacy to provide inhaler counseling. **Method:** Pharmacists participated in a live day long professional development activity consisting of morning lectures and an afternoon hands on training session. Primary outcome measures included pre- and post-video critiques assessing the participant’s knowledge, skills and self-efficacy with aspects of providing counseling to patients with respiratory conditions. **Results:** Pharmacist knowledge, self-efficacy and perceived ability to counsel patients in the proper techniques for inhaler use significantly improved after the activity, suggesting value in using a combination of teaching strategies. This program improved pharmacists’ knowledge, skills and self-efficacy to counsel patients on inhaler use, with pharmacists indicating their commitment to make changes to their methods of counseling. **Implications:** A combination of teaching strategies for continuing professional development can lead to improved pharmacist knowledge, skills and self-efficacy, with pharmacists committed to improving their patient counseling techniques. Improvements in patient counseling will result in better patient adherence rates, thus leading to improved health care outcomes.

Five Years of Experience with a Teaching and Learning Curriculum (TLC) for Pharmacy Residents. Stefanie A. George, *NEOMED*, Timothy R. Ulbrich, *Northeast Ohio Medical University*. **Objectives:** To describe the structure and experiences of a TLC program fostering recommendations published by the AACP Pharmacy Practice Section’s Task Force on Student Engagement and Involvement with input from the ASHP. **Method:** Five years’ of quality improvement data was analyzed including number of residents completing the program, number/type of teaching hours completed, feedback on each of the four on-campus seminars, and program expenses. **Results:** The number of participants expanded from 9 residents representing 4 residency

programs in 2010 to 41 residents from 19 programs in 2015. Since 2010, a total of 109 residents (100%) have successfully completed the program. The 2015 offering utilized 13 faculty members to deliver 4 seminars, 32 teaching advisors to mentor 41 residents, and provided an average of 33 teaching hours per resident divided between large group (10%), small group (15%), and evaluation (75%). To orient learner's to various teaching and learning topics, four full-day seminars take place in the summer/fall prior to most of the assigned teaching experiences. For 2015, overall effectiveness of each seminar was rated by participants as 4.4, 4.3, 3.9, and 4.9 on a 1-5 Likert scale (1-strongly disagree; 5-strongly agree) for seminars 1-4, respectively. A fee of \$250 per resident was used to offset the 2015 program expenses of \$9,114.96.

Implications: There is currently no standardization for TLC programs, resulting in wide variability in program offerings. It is important for programs to share their structure and outcomes data to help inform best practices that can be replicated and/or that may inform future accreditation standards.

EXPERIENTIAL EDUCATION

Completed Research

Four-year Study of the Correlation between Clinical Rotations Completed before Midyear to Residency Match. Toyin S. Tofade, *University of Maryland*, Lisa Lebovitz, *University of Maryland*, Andrew Grogg, *University of Maryland School of Pharmacy*, Mark Brueckl, *University of Maryland School of Pharmacy*. **Objectives:** Clinical experiences may increase student confidence to handle the Residency Showcase, applications, and interview process. We examined here if there is a relationship between the number of clinical advanced pharmacy practice experiences (APPEs) completed prior to the American Society of Health-System Pharmacists Midyear Clinical Meeting (Midyear) and overall, and matching for a post graduate year one (PGY1) residency among the University of Maryland School of Pharmacy (UMB) Classes of 2012 through 2015. **Method:** Both the type and timing of APPEs for 238 students in the UMB Classes of 2012 through 2015 who applied for residencies were analyzed. Statistical analyses were performed to determine if there is a significant effect of the number of clinical APPEs completed prior to Midyear on matching for a PGY1 residency, or an effect of the number of clinical APPEs completed during pharmacy school on matching for a PGY1 residency. This project was deemed exempt by the Institutional Review Board (IRB). **Results:** Analysis showed there was no significant effect of the number of clinical APPEs completed before Midyear on matching for a PGY1 residency ($p=0.214$). Furthermore, the total number of clinical APPEs completed by graduation had no significant effect on matching for a PGY1 residency ($p=0.240$). **Implications:** While students may find great value in clinical APPEs as a strong foundational base for pursuing a PGY1 residency, the data showed there was no significant effect of the timing of clinical APPEs and matching to a residency. Further study into other variables that contribute to obtaining a residency is warranted.

A Review of the Literature for IPE and Pharmacy Students: Mapping to Standard 11 Interprofessional Education. Richard Kang, *Creighton University School of Pharmacy*, Kimberley J. Begley, *Creighton University*, Ann M. Ryan Haddad, *Creighton University*. **Objectives:** To analyze the literature from 2005 to 2015 for examples of interprofessional education (IPE) and collaborative practice for pharmacy students. To map these examples to ACPE Standard 11-IPE. **Method:** A systematic search was conducted using Google Scholar, Medline, EBSCOhost and PubMed. The terms used in the

search were pharmacy, pharmacy student, pharmacy education, inter-professional relations, interdisciplinary communication, multidisciplinary education, interdisciplinary education, interprofessional education. Over 80 articles were identified, and a team of faculty with IPE experience, narrowed the list to articles relating to pharmacy students and studies in the United States. **Results:** Forty articles were deemed pertinent to review. The articles were divided into 4 educational categories, which included 2 Introductory and 7 Advanced Pharmacy Practice Experiences, 18 didactic, and 15 miscellaneous activities (ie, workshop, events and service learning). Among didactic activities, 10 incorporated IPE into required courses. An Excel database was created to map the type of IPE activity, project description, duration, pharmacy student year, health professions involved, setting (ie, simulation, service learning, etc.), ACPE Standard 11 key elements, assessment tools used, and outcomes. A descriptive analysis of the 40 IPE articles mapped to Standard 11 will be presented. **Implications:** Many schools of pharmacy have implemented IPE activities that span community engagement/service-learning, didactic, and experiential opportunities. As ACPE Standards are implemented in 2016, these examples will serve as models for other schools to consider as they develop their own IPE programs.

Adherence Barriers Identified by a Motivational Interviewing Pharmacy-Student Intervention among Medicare Advantage Plan (MAP) Patients. Santhi Masilamani, *University of Houston*, Susan Abughosh, *University of Houston College of Pharmacy*, Ya-Huei Li, Tara Esse, Amanda Mann, Bhakti Raha, Omar Serna, Omar Serna. **Objectives:** To identify adherence barriers to angiotensin converting enzyme inhibitors (ACE-Is)/ angiotensin receptor blockers (ARBs) among non-adherent patients with diabetes and hypertension in a Texas-based Medicare Advantage Plan (MAP) through a pharmacy student telephone intervention using motivational interviews (MI). **Method:** A 3-day training course was provided to students on APPE ambulatory care rotations by a certified MI trainer. Student proficiency with MI skills (expressing empathy, using reflective listening, eliciting change) was evaluated by the trainer. Health plan data was used to identify hypertensive diabetic patients on ACE-Is/ARBs. Patients with a 6-month proportion of day covered (PDC) <0.8 were considered non-adherent and randomized in a 3:1 ratio to intervention and control group. Students contacted 250 patients from those in the intervention group to identify adherence barriers. Descriptive analyses and Chi-square tests assessed frequency distributions of the adherence barriers and examine associations with patients' age-group (< 65 vs. ≥65 years-old), gender, income status (subsidy vs. no subsidy), medication type (ACE-I vs. ARB), and initial PDC (<0.5; 0.5-0.6; and ≥0.7). **Results:** Patients commonly denied of a barrier (32%) and the barrier of forgetfulness (23.6%) as a barrier. Other reported reasons included cost, modified dosage instruction, pill burden, side effects, transportation, and lack of disease state knowledge. No specific barrier was identified in 20% of participants. Chi-square tests showed significant difference in barrier type with income status ($p=0.0066$) and initial PDC ($p=0.0509$). **Implications:** Training 4th year APPE pharmacy students in MI to identify adherence barriers among non-adherent patients is a feasible and effective method for adherence education.

Advanced Pharmacy Practice Experiences and Leadership: Patterns of Preceptor Confidence and Student Engagement. Charlene Williams, *University of North Carolina at Chapel Hill*, Jacqueline E. McLaughlin, *University of North Carolina at Chapel Hill*, Kim I. Leadon, *University of North Carolina at Chapel Hill*, Julia Khanova, *University of North Carolina*, Philip T. Rodgers, *University of North*

Carolina at Chapel Hill. Objectives: The purpose of this study was to examine leadership experiences offered by preceptors and preceptor perceptions about leadership activities. **Method:** An anonymous questionnaire was sent electronically to 610 preceptors of fourth year doctor of pharmacy student in August of 2015 inquiring about confidence in leadership ability, extent of student engagement in leadership activities, and preceptor support needed. Differences based on leadership background, such as formal training, were examined using independent t-test. Continuous data is presented as mean (standard deviation). *P*-value <0.05 was considered significant. **Results:** Survey response rate was 28% (n=171). Preceptor confidence in ability to provide leadership activities was 8.35 (1.38) [0-10 Likert Scale; 0= cannot do at all, 10=highly certain can do]. Preceptors expressed highest confidence teaching that leadership comes from those with and without titles 9.48 (1.63) and least confidence involving students in advocacy 6.39 (3.04). Preceptors were most likely to engage students in collaboration and least likely to involve them in advocacy. Preceptors with leadership training demonstrated higher confidence and more engagement with involving students in a number of leadership activities than those without training (*p*<0.05). The most commonly desired support was leadership training and development (n=23, 40%). **Implications:** Preceptors were generally confident about their ability to provide leadership activities and were involving students in some leadership activities. Leadership training and development was desired by preceptors. Schools and organizations could discuss how to collaboratively provide this training.

An Interprofessional Education Initiative at an Academic Health Center: Empowering Patients through Interprofessional Care (EPIC). Vincent C. Dennis, *The University of Oklahoma*, Mark L. Britton, *The University of Oklahoma*, Nancy A. Letassy, *The University of Oklahoma*, Mark J Fisher, *The University of Oklahoma College of Nursing*, Dale Bratzler, *The University of Oklahoma College of Public Health*, Rhonda A Sparks, Britta M Thompson, *Penn State University College of Medicine*. **Objectives:** To assess changes in student perceptions of interprofessional care delivery, their attitudes toward teamwork and their readiness for interprofessional learning before, during and after a longitudinal intervention of interactive didactic and clinical session learning activities. **Method:** Eighty students from thirteen disciplines within the colleges of allied health, dentistry, medicine, nursing, pharmacy, public health, and social work began a two semester initiative and were assigned to one of eight interprofessional teams. During the fall semester, four didactic sessions focused on the Interprofessional Education Collaborative (IPEC) competencies were conducted monthly. During the spring semester, the teams provided supervised patient care monthly at a local charitable outpatient clinic. Students completed a Life Circle Diagram (LCD), TeamSTEPS Teamwork Attitudes Questionnaire (T-TAQ) and a Readiness for Interprofessional Learning Scale (RIPLS) at baseline (T1), after delivery of the fall didactic sessions (T2) and at the end of the spring clinical sessions (T3). **Results:** Analysis of aggregate data for students completing all time points showed statistically significant increases (*p*<0.05) for both the T-TAQ and RIPLS between T1 and T3, but not between T1 and T2 or T2 and T3. Analysis of the aggregate student LCDs related to perceptions of interprofessional care delivery showed statistically significant (*p*<0.01) increases in the number of circles (specific health disciplines), lines (relationships) and arrows (communication) represented in their depictions between T1 and T3. **Implications:** An initiative involving both didactic and clinical sessions over two semesters has the potential to expand student

perceptions of interprofessional care delivery and positively influence student attitudes.

Assessing Student Run Health and Wellness (HW) APPE Community Projects and Student Summaries/Reflections. Debra B. Feinberg, *Albany College of Pharmacy and Health Sc*, Sandra W. Rosa, *Albany College of Pharmacy and Health Sciences*, Cindy Jablanski. **Objectives:** To evaluate the quality of student designed and implemented Health and Wellness APPE Community Projects and the impact of the project on the student's professional career. **Method:** P4 students selected a health and wellness project identified as relevant and important to the population served by the community pharmacy. All projects were approved by the preceptor. The student was responsible for designing, implementing and executing the project under the supervision of the preceptor. EE faculty evaluated the projects utilizing a rubric as exemplary/E, acceptable/A, or unacceptable/U. The rubric assessed the project design, materials utilized, recognition of other health professionals, number of patients impacted, student's post project summary and student reflection on the importance of the role of the pharmacist and impact of the project on the community. **Results:** All projects received a score of acceptable with a few exemplary for each module. The student's appreciated their role in the community and felt that participation from start to finish in these projects had a profound impact on their professional outlook and career. **Implications:** Involving pharmacy interns early on in community based projects assists the professional in establishing ties to their community and alerts them to the needs of the community and the impact that a professional can have on the health and wellness of their patients.

Co-curricular Activities Documented by Student Pharmacists: The Iowa Experience. Susan S. Vos, *The University of Iowa*, Ashley Sabus, *University of Iowa*, Jennifer L. Seyfer, *The University of Iowa*, Laura Umlah, *University of Iowa*, Colleen Gross-Advani, *University of Iowa*, Jackie Thompson-Oster, *University of Iowa Libraries*. **Objectives:** Affective domain elements of the CAPE 2013 and the ACPE standards 2016 have become increasingly important in pharmacy education. Involving students in co-curricular activities (e.g. professional service, leadership, and community engagement) may enhance the students' ability to gain values and attitudes of a professional while practicing their knowledge and skills. This poster will: 1.) Illustrate a method for integrating co-curricular activities into an experiential course; 2.) Describe the evolution of the course and data collection tool over the past nine years; and 3.) Highlight trends of co-curricular activities over six years. **Method:** Requirements for co-curricular activities were determined (e.g. preceptor oversight, student training prior to event). Initially, activities were categorized into: professional service and leadership. In 2012, community engagement category was added. Minimum expectations were defined. Students began documenting activities in 2007 using a web-based tool. Reflective assignments and discussion sessions were held with students. **Results:** Since 2010, over 14,000 co-curricular activities have been documented by students, including over 3,000 professional service and over 11,000 leadership activities. The most common activities were immunization clinics, cardiovascular and diabetes screenings, and student organization and state or national association meeting attendance. **Implications:** Based on student and preceptor feedback, the course has evolved to meet diverse learning needs of the student. Reflective assignments have been modified to utilize the continuing professional development model to develop lifelong learners. Updates to the course include the ability to indicate inter-professional activities.

Comparison of APPE Grading Between Adjunct and Full-time Faculty. Lena M. Maynor, *West Virginia University*. **Objectives:** The primary objective of this study was to assess APPE grades to determine differences in the assignment of Honors and Pass grades among adjunct and full-time faculty. Secondary outcomes included characterization of the types of rotations and rotation blocks in which students most commonly received Honors grades. **Method:** This study was approved by the Institutional Review Board at West Virginia University (WVU). Grades from APPE rotations during the 2014-2015 academic year were analyzed to determine the primary and secondary objectives. **Results:** Honors grades were assigned for 180 (27%) rotations during the 2014-2015 academic year. Honors grades for full-time faculty rotations were assigned less frequently than adjunct faculty rotations (2% vs 25%, $p < 0.001$). Honors grades were assigned least frequently for Acute Care rotations (14%) and most frequently for APPE Advanced Institutional rotations (44%), and there was a significant relationship between type of rotation and frequency of Honors grades assigned ($p < 0.001$). The number of Honors grades assigned per block ranged from 13 (block 4) to 30 (block 7), and there was no significant difference in the proportion of Honors grades received for blocks 1-4 (13%) compared to blocks 5-8 (14%), $p = 0.33$. **Implications:** In this student cohort, full-time faculty preceptors were significantly less likely to assign Honors grades for APPE rotations. This may be reflective of the types of rotations generally precepted by full-time faculty or a tendency for grade inflation among adjunct faculty. Preceptor development in assessment may be beneficial, particularly in the adjunct preceptor cohort.

Comparison of Students' and Patients' Perceptions on Reasons for Medication Non-adherence. Patricia L. Darbshire, *Purdue University*, Daraoun Mashrah, *Purdue University*. **Objectives:** The purpose of this research was to explore differences in the perceptions of pharmacy students with those of their patients regarding factors that contribute to medication non-adherence. **Method:** Two hundred eighty six pharmacy students and 310 patients participated in this study. Patients were recruited by pharmacy students from Midwest community pharmacies, while the students completed an experiential rotation. Students identified their patients based on evidence of non-adherence from medication profiles and asked patients to participate in the assignment. Data was collected over a four-year period, resulting in two years of information on patient perceptions and two years on student perceptions. The researchers ranked the data and examined it in light of existing medication adherence literature. **Results:** The researchers found a significant difference between patients' and students' rankings of reasons for medication non-adherence. (4.38, 3.42), $t(15) = 5.11$, $p < .001$, $d = 1.27$. Although patients and students were in agreement with the top three factors contributing to non-adherence (taking too many medications, forgetting to take them, and the expense) there were important differences between student and patient perceptions in regard to 13 additional reasons. Medications that interfere with lifestyle, sexual health and drinking alcohol are significant issues for patients, whereas, students believed that confusion and lack of understanding were primary problems. **Implications:** Opportunities to understand and reflect on the dissonance in perceptions of student pharmacists and their patients provides an additional avenue for medication adherence instruction. Medication adherence education can be situated in experiential education to ensure that training translates into clinical expertise.

Creation of Experiential Education Honors Policies to Recognize Exemplary IPPE and APPE Performance. Laurie L. Briceland, *Albany College of Pharmacy and Health Sciences*, Sandra W. Rosa, *Albany College of Pharmacy and Health Sciences*, Teresa J. Lubowski, *Albany College of Pharmacy and Health Sciences*, Cindy Jablanski. **Objectives:** To develop IPPE Experiential Education Excellence Awards and APPE Experiential Education (EE) Honors Policies to recognize excellence throughout IPPE and/or APPE sequences. **Method:** Two policies were created to recognize experiential excellence in $< 10\%$ of students in the class. The APPE EE Honors replaced Dean's List designation during P4. Rubrics were developed and incorporated the following criteria: IPPE: preceptor feedback/grades; EE faculty rubric-graded work-products; and professionalism. If $> 10\%$ of the class is identified, discretionary points (either positive or negative) are applied by EE to pare down. APPE: preceptor nomination, grades; rubric-graded assignment; IPPE awards. Disqualifications include academic integrity infractions, $< B+$ grades, "Needs Improvement" evaluation ratings. Discretionary points applied as needed to attain 10% of class. EE personnel prepare the awardee roster, which is endorsed by faculty EE committee. Awards (certificates/books) are bestowed to P3 students during P3 Pinning Send-off Ceremony and to P4 students at Senior Salute Awards Ceremony/graduation bulletin. **Results:** APPE EE Honors have been awarded to the Class of 2014 and 2015. Interestingly, students who received APPE Honors were not always the top GPA students in the class, as criteria in addition to grades are factored into EE awards. IPPE Awards will be distributed in April 2016. **Implications:** Given that the EE sequences comprise at least one-third of the curriculum, it is fitting to recognize excellence in this portion of the program. The development and implementation of EE Honors policies has proven to be a wonderful method to recognize exemplary performance of 10% of students during the EE sequences.

Deliberate Practice as a Theoretical Framework for Interprofessional Experiential Education. Joyce M Wang, *University of Wisconsin-Madison*, Joseph A. Zorek, *University of Wisconsin-Madison*. **Objectives:** The theory of deliberate practice (DP) has been applied to many skill-based performance activities. The primary aim of this project was to explore the utility of DP as a theoretical framework for model development within interprofessional experiential education (IEE). **Method:** CINAHL, ERIC, and MEDLINE databases were searched using the keywords "deliberate practice" and "interprofessional education." Relevant articles were selected based on theoretical support for the overlap of DP and IEE. Defining characteristics of DP were distilled with particular emphasis on their application to the Interprofessional Education Collaborative's (IPEC) core competencies. Recommendations for IEE model development were identified through the synthesis of DP principles and IPEC competencies. **Results:** There is a high degree of synergy between DP principles and IPEC competencies. Our synthesis of the literature yielded a cyclical four-step process through which educators can help students begin developing interprofessional collaborative practice competencies on their rotations: (1) create an individualized IEE plan, (2) develop IEE experiences based on IEE plan, (3) embed frequent student reflection and preceptor feedback within IEE plan, and (4) revise IEE plan and experiences based on step 3. **Implications:** The cyclical four-step process synthesized through this literature review may be used to guide the development of new IEE models. The purposeful development of IEE models grounded in a theory that has already been operationalized in other skill-based performance areas is an important step to address the Accreditation Council for Pharmacy Education's new standards mandating interprofessional experiential education.

Designing a Community Pharmacy Advanced Pharmacy Practice Experience Curriculum (APPE) for Community Pharmacy-Bound Students. Teresa A. O'Sullivan, *University of Washington*, Erin Sy, *University of Washington*, Jennifer Bacci, *University of Washington*. **Objectives:** All fourth-year pharmacy students must complete one core advanced pharmacy practice experience (APPE) in a community pharmacy. Community pharmacy-bound students should ideally complete additional higher-level community pharmacy APPEs. Entry-level competencies for community pharmacy practice outlined by the NACPA-ACPE task force don't provide specific recommendations for core and elective learning activities. The study objective was to differentiate learning activities for students in a core community pharmacy APPE versus an elective advanced community pharmacy APPE. **Method:** Qualitative analysis of interview responses from 42 community pharmacy stakeholders was conducted (staff pharmacists, pharmacy managers, and district managers; faculty members; pharmacy students; pharmacy organization executives). **Results:** Components of a core community pharmacy APPE and two advanced community pharmacy APPE electives were delineated. Students completing a core community pharmacy experience should operate at the level of a staff pharmacist by the end of the experience. Activities include supervising the dispensing process, patient counseling, making appropriate self-care recommendations, administering immunizations, and conducting a basic medication therapy management (MTM) consult. Activities in an advanced patient care elective include care of highly complex community-dwelling patients using the pharmacists' patient care process, providing on-site patient care services (point-of-care testing, disease state management, complex MTMs), and conducting a practice enhancement project. Activities in a management elective include exposure to pharmacy operations (sales, inventory management, payroll, and quality assurance), compliance with regulations (insurance, record-keeping, counseling, and ordering prescriptions), and demonstrating leadership to the pharmacy staff. **Implications:** Delineation of activities in core and elective community pharmacy APPEs will better prepare community pharmacy-bound students for their career path.

Effectiveness of Utilizing the RAFT Approach in Engaging and Developing Preceptors. Charles Cather, *Northeast Ohio Medical University*, Scott S. Wisneski, *Northeast Ohio Medical University*, Louis D. Barone, *Northeast Ohio Medical University*, Susan P. Bruce, *Northeast Ohio Medical University*. **Objectives:** To identify the impact of utilizing the RAFT Approach during experiential site visits to affect changes in a preceptor's commitment to students, preceptor development and the experiential experience provided. **Method:** R.A.F.T - Rapport Building, Assessment, Focused Instruction and Trinket/Thank You is the approach used during experiential site visits. Following the Focused Instruction visit an IRB-approved eleven question survey was distributed to preceptors (n=64). The survey consisted of 5-point Likert Scale open ended questions divided among three domains of preceptor experience, evaluating the field-based experiential assistant director, and changes to future rotations. **Results:** A total of 51 (80%) of the preceptors assessed completed the survey. The survey revealed the field-based director was knowledgeable, polite, professional, and communicated effectively (4.79), the visit was a positive experience (4.63). The information provided was informative (4.45), answered my questions (4.57) and more confident as a preceptor after the visit (3.92). Thirty nine percent of the preceptors planned on making a change to future rotations. Areas of preceptor development identified included developing and organizing a rotation, preparing a schedule of student activities, providing effective feedback, and handling difficult student learning situations. **Implications:** Through the utilization of the RAFT approach to

experiential site visits preceptors can become more engaged and open to making changes (ex. defining expectations for students, providing feedback, utilizing university provided tools) to their rotations. This approach provides an effective method in the continued development of preceptors and rotations.

Evaluating the Impact of a Student Peer-Mentoring Program for Comprehensive Medication Reviews. Brianne L. Porter, *The Ohio State University*, John Edelstein, Jonathan Bosold, Amy Lehman, Jennifer L. Rodis, *The Ohio State University*. **Objectives:** For Introductory Pharmacy Practice Experience (IPPE) students peer-mentored by Advanced Pharmacy Practice Experience (APPE) students, this study evaluates the impact on IPPE student comfort and confidence in conducting comprehensive medication reviews (CMRs) and student satisfaction with the peer-mentoring experience. **Method:** IPPE and APPE students were assigned to the same community pharmacy rotation site and paired for 16 hours over the course of 1 month. During this time, APPE students mentored the IPPE students conducting CMRs under the supervision of a licensed pharmacist. APPEs first modeled the process and then mentored IPPE students. All students were formally trained on conducting CMRs prior to beginning their assignments; APPEs were provided additional mentor training. IPPE students completed both pre- and post-rotation surveys and APPE students participated in a focus group to evaluate stated objectives. **Results:** 17 of 24 (71%) IPPE students' pre and post responses were compared; 5 (100%) APPE student mentors participated in the focus group. IPPE students' confidence in leading CMRs under their peer-mentor and supervision of a pharmacist shifted significantly from not confident to confident at the conclusion of the experience ($p=0.008$). Additionally, IPPE students reported positive experiences with APPE mentors. Similarly, APPE students reported the experience positively impacted their confidence and clinical knowledge. Both groups would recommend the experience to future students. **Implications:** This study showcases the feasibility and potential positive impacts of a student peer-mentoring program in the community pharmacy experiential setting.

Evaluation of Medication Reconciliation Teaching Strategies in an Introductory Pharmacy Practice Experience Course. Kathy Komperda, *Midwestern University*, Kelly Lempicki, *Midwestern University*. **Objectives:** The intent was to design, implement and evaluate a simulated learning exercise (SLE) in an Introductory Pharmacy Practice Experience (IPPE) course to prepare third professional year students to independently perform medication reconciliation. The SLE was a 30 minute lecture followed by a 90 minute workshop. To evaluate the SLE, students were divided into three groups. Group A received the lecture; Group B received the lecture and workshop; and Group C received no additional training. **Method:** The primary objective was to evaluate the effectiveness of a SLE on the student's ability to perform medication reconciliation. Secondary objectives were to compare the students' perception of their ability before and after the SLE and to describe their perceptions of the learning activities. All students completed a simulated medication reconciliation activity with a standardized patient (SP) after their assigned learning activity. Students completed a pre- and post-survey. Results were analyzed with descriptive statistics, ANOVA, and mixed model MANOVA, as appropriate. **Results:** One hundred nineteen students participated in the project. Students in Group B had the highest total score on the SP activity compared to Groups A and C (76.0%, 69.0%, 65.3% respectively; $p<0.02$). Group B reported high levels of agreement ($\geq 94.6\%$) on all statements describing the lecture, workshop, and SP activity including more of these activities should be included in the curriculum.

Implications: A SLE focused on teaching medication reconciliation skills in an IPPE course successfully increased the student's ability to perform medication reconciliation in a simulated environment and was positively received.

Evaluation of Virtual Dispensing Software to Prepare Students for Introductory Community Pharmacy Practice Experience. Diem Thai, *West Coast University*, Mohammed A. Islam, *West Coast University*. **Objectives:** To evaluate the impact of a virtual dispensing software to prepare students for Introductory Pharmacy Practice Experience (IPPE) in community practice settings. **Method:** Students used MyDispense software for six weeks of training in the areas of interpreting prescriptions, entering prescription data, being familiar with the top 100 dispensed medications, utilizing drug information databases and counseling patients. A 22-item survey instrument on the effect of MyDispense on students' confidence was developed and administered prior to exposure to the software and after their IPPE rotation. Mann-Whitney U test were used to analyze the 4-point Likert-scale data. **Results:** Thirty seven students completed both pre- and -post surveys, yielding a response rate of 69%. Responses showed that the software improved students' confidence in four of the five surveyed areas. The median [interquartile range (IQR), 25%-75%] response rates of pre-and-post software use for students' confidence to interpret prescriptions [pre: 3 (3-4) versus post: 4 (3-4); $p=0.027$], enter prescription orders [pre: 3 (2-4) versus post: 4 (3-4); $p=0.017$], being familiar with top 100 [pre: 3 (2-3) versus post: 3 (3-4); $p=0.001$], and counsel patients [pre: 3 (2-3) versus post: 3(3-4); $p=0.001$] all improved after using the software. Overall, 95% of surveyed students strongly agreed/agreed that they were able to apply what they learned and 90% strongly agreed/agreed that this training was necessary for their success on community IPPE. **Implications:** Our results suggest that the MyDispense software can be a valuable tool for pharmacy schools without a dispensing laboratory in preparing students for community IPPE.

Experiential Factors and Residency Placements: Perceptions of Pharmacy Residency Program Directors/Students – Longitudinal and APPE. Philip M. Hritcko, *University of Connecticut*, Jennifer Fraser, *MCPHS University*, Brett Feret, *The University of Rhode Island*, Steven J. Crosby, *MCPHS University*. **Objectives:** The objective of this study was to compare and contrast the perceptions of residency program directors (RPD's) and students for pharmacy practice residency application considerations. This abstract compares and contrasts the opinions of both RPD's and students related to rotation length as it pertains to 4 and 6 week APPEs and how important a factor is completing a longitudinal rotation before residency selections. **Method:** The New England Regional Departments of Experiential Education (NERDEE) consortium dispersed an anonymous 17 question electronic survey to residency program directors (N=245) and pharmacy students (N=120) from multiple schools in the New England region. The overall survey was designed to evaluate the perceived importance of different factors related to residency candidate placement according to both RPDs and students. **Results:** Overall, student's preferred APPE schedules of 6 rotations and 6 weeks in length compared to no preference or 9 rotations and 4 weeks in length. Relative to RPD's students preferred longer rotation duration ($p=0.042$), RPD N=232; Student N=107. Students view the importance for a longitudinal rotation is of higher importance, compared to RPD's ($p<0.001$) RPD N=232; Student N=107. Both of these comparisons were found to be statistically significant. **Implications:** Programs can use this comparison data to educate PharmD students pursuing residencies on what RPD's are concerned with in terms of

rotation length and the importance of longitudinal rotations, although it is important to disclose that individual programs may have different expectations.

Experiential Factors and Residency Placements: Perceptions of Program Directors and Students – APPE Rotation Sequence. Jennifer Fraser, *MCPHS University*, Philip M. Hritcko, *University of Connecticut*, Brett Feret, *The University of Rhode Island*, Steven J. Crosby, *MCPHS University*. **Objectives:** To compare and contrast perceptions of residency pharmacy program directors (RPDs) and pharmacy students in factors related to experiential education. This abstract is looking at opinions related to APPE rotation schedule preference prior to both ASHP midyear and residency interviews. **Method:** The New England Regional Departments of Experiential Education (NERDEE) consortium dispersed an anonymous 17 question electronic survey to RPDs (N= 245) and students (N=120) from multiple colleges. The survey was designed to evaluate the perceived importance of factors related to residency candidate placement according to both RPDs and students. **Results:** Prior to Midyear: RPDs view Internal Medicine (IM) as the most important rotation. Specialty electives are second preference, Institutional third, Ambulatory Care (AMB) fourth, and Community is fifth ($p<0.02$ for all). Students perceive IM as the most important rotation ($p<0.001$). Specialty electives are second ($p<0.001$). Institutional and AMB are equally third ($p=0.238$), and both are preferred over Community ($p<0.001$). Prior to Residency Interviews: RPDs view IM as the most important rotation ($p<0.001$). Specialty electives are more important than AMB ($p=0.002$) but equal to Institutional ($p=0.144$). Institutional and AMB are equally preferred ($p=0.053$). All are preferred over Community ($p<0.001$). Students perceive IM as the most important rotation ($p<0.05$) except specialty electives ($p=0.107$). Specialty electives, Institutional, and AMB rotations are preferred over Community ($p<0.001$) but equal preference to each other ($p>0.05$). **Implications:** Based on results, this could influence the way colleges change rotation structure to potentially help students with residency placements. Possible pedagogical changes to current practice for experiential education could be considered.

Experiential Factors and Residency Placements: Perceptions of Program Directors and Students – Grading and GPA. Brett Feret, *The University of Rhode Island*, Jennifer Fraser, *MCPHS University*, Philip M. Hritcko, *University of Connecticut*, Steven J. Crosby, *MCPHS University*. **Objectives:** The objective of this study was to compare and contrast the perceptions of residency program directors (RPD's) and students for pharmacy practice residency application considerations. This particular abstract is looking at the opinions related to grading, specifically grade point average (GPA) and the importance of having a numeric grade compared to a pass/fail grade for advanced pharmacy practice experiences (APPE). **Method:** The New England Regional Departments of Experiential Education (NERDEE) consortium dispersed an anonymous 17 question electronic survey to residency program directors (N=245) and pharmacy students (N=120) from multiple schools in the New England region. The overall survey was designed to evaluate the perceived importance of different factors related to residency candidate placement according to both RPDs and students. **Results:** Overall, student's felt a higher GPA was more important compared to RPD's ($p=0.001$) although the majority of respondents in both groups felt 3.0 was the minimum. Thirteen percent of students felt the minimum GPA for application should be 3.5 compared to only 3% of RPD's. In terms of grading structure, 63% of students felt a letter grade for APPE was extremely important or important compared to only 48% of RPD's.

($p=0.007$). **Implications:** Programs can use this comparison data to educate PharmD students pursuing residencies on what RPD's are concerned with in terms of grade point average and grading structure for pharmacy practice experiences, although it is important to disclose that individual programs may have different expectations.

Exploring the Role of a Pharmacy Student in a New Rotation Site in Rural Guatemala. Chandler Follett, *University of Colorado*, Connie A. Valdez, *University of Colorado*, Sarah Scoular, Jodie V. Malhotra, *University of Colorado*. **Objectives:** To evaluate global health needs and implement effective and sustainable clinical pharmacy services. **Method:** The University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences established a new International APPE Rotation site in rural Guatemala for fourth year students. The interdisciplinary clinic is equipped with a pharmacy which is staffed by a local Guatemalan pharmacy technician. Initial rotation expectations included working with and educating the pharmacy technician, developing medication education documents, chronic disease state management, documentation using an intervention log, and weekly reflections. The first student was expected to explore opportunities for clinical pharmacy services that will improve patient care. **Results:** Based on conducted needs assessments, the first of three APPE students focused interventions on education, medication safety, and pharmacy process improvement. Intervention logs showed 89% acceptance of the 237 documented recommendations. Educational sessions on Chikungunya virus and antibiotic resistance were conducted to the clinic staff and ten disease state lectures were presented to the pharmacy technician. Technician training included patient triage, workflow implementation, medication dosing, patient-specific communication, and medication reconstitution. Approximately thirty medications plus multiple medical supplies were added to the inventory order after collaboration with clinic staff. Other projects included safe injection technique with filter needles, birthing center medication storage, developing low-health literacy appropriate medication labels, establishing a universal prescription format, and utilizing liquid medication dosing devices. **Implications:** Based on the pharmacy student's work in Guatemala, there is an apparent need for more pharmacy specific global health projects in clinics serving underserved populations around the world.

IPPE Performance Comparison Between Students in a Traditional and Distance Education Entry Level PharmD Degree Program. Sarah Eudaley, *Lake Erie College of Osteopathic Medicine*, Julie J. Wilkinson, *Lake Erie College of Osteopathic Medicine*, Amanda Kelley, *Lake Erie College of Osteopathic Medicine School of Pharmacy*, Katherine M. Tromp, *Lake Erie College of Osteopathic Medicine*, Michelle Rodriguez, *LECOM-Bradenton*, Hershey S. Bell, *Lake Erie College of Osteopathic Medicine*. **Objectives:** An inaugural class of a distance education (DE) entry level PharmD degree pathway students completed IPPE rotations in Summer/Fall 2015. As this is only the second DE program available in the US, potential preceptors may be unfamiliar with the method of delivery and rigor of the program. The purpose was to compare performance of DE students on IPPE rotations to that of students in the traditional four-year pathway at the same School of Pharmacy. **Method:** Data from final evaluations of DE and traditional students was compared using Fisher's exact test. Performance areas included knowledge base, communication skills, and professionalism. Preceptors ranked each area using 'excellent', 'competent', and 'deficient'. **Results:** There were a total of 156 community IPPEs (DE $n=20$; traditional $n=136$) and 155 institutional IPPEs (DE $n=18$; traditional $n=137$). For community and institutional rotations, performance of DE and

traditional students was similar for all performance measures evaluated, with p values ranging from 0.28 to 1.00. Of note, though not statistically significant, 100% of DE students received 'excellent' rankings for professionalism on both community and institutional rotations compared to 87% for traditional students. **Implications:** As the DE pathway is only the second in the nation to be offered and potential preceptors may be unfamiliar with the delivery method and rigor of the program, this data suggests that DE students perform as well on IPPE rotations as students in the traditional four-year pathway. This is particularly valuable as students in the DE pathway are geographically located nationwide and are largely responsible for securing IPPE rotation preceptors.

Impact of Optional Pharmacy Internship Experience on Second Year Introductory Pharmacy Practice Experience (IPPE). Kelsey Brantner, *University of Washington*, Jennifer Danielson, *University of Washington*. **Objectives:** In addition to required IPPEs, many students get pharmacy experience through optional internships (ie, outside employment) during school. It has been shown that pharmacy experience prior to matriculation does not significantly impact APPE performance. But, internship experience during school may affect IPPE performance. Site visits to local hospitals revealed that many institutional internship programs are highly sophisticated. The purpose of this project was to determine if pharmacy internship experience impacts institutional IPPE performance. **Method:** Three years of institutional IPPE performance data along with information collected during IPPE placements were used. Number of performance rankings as "Exceeds Expectations" versus "Meets Expectations" was compared for students with internships versus those without. Performance based on type of internship (institutional versus community) was also compared. Fishers exact statistical test was used for all comparisons. **Results:** A total of 206 students reported internship experience (64 institutional, 142 community), 67 had none. Student interns were given "Exceeds Expectations" (873 total, 4.2 per student) more often than non-interns (241 total, 3.6 per student) ($p<0.01$). Institutional student interns performed better (358 total, 5.6 per student) than non-interns ($p<0.01$). No difference was found in performance between community interns (515 total, 3.6 per student) and non-interns ($p=0.93$). **Implications:** Institutional internships improve student performance so significantly that these experiences should be considered when designing IPPE curricula. To the extent that external employment does not negatively affect academic performance, schools should encourage students to pursue internships and partner with institutions to integrate IPPE with internship learning.

Interprofessional Education Accreditation Standards in the USA: 2015 Update. Joseph A. Zorek, *University of Wisconsin-Madison*, Cynthia L. Raehl, *Texas Tech University Health Sciences Center*. **Objectives:** The primary aims of this study were to identify, analyze, and characterize changes in interprofessional education (IPE) accreditation standards between 2012 and 2015. **Method:** Eighteen keywords were used to identify potentially relevant IPE statements within the accreditation documents for all practice-level degrees in dentistry, medicine, nursing, occupational therapy, pharmacy, physical therapy, physician assistant, psychology, public health, and social work. Authors independently categorized identified statements into one of three mutually exclusive categories: non-applicable, non-accountable, and accountable. Interrater reliability was assessed, and content analysis was used to identify themes. Categorizations from 2012 and 2015 were compared using the Mann-Whitney U test. **Results:** Two hundred twenty-eight potentially relevant IPE statements were identified (11.2% increase). Decreases in non-applicable (27/205 [13.2%] in

2012 vs. 26/228 [11.4%] in 2015; $p=0.679$) and non-accountable (118/205 [57.6%] vs. 116/228 [50.9%]; $p=0.195$) statements and an increase in accountable statements (60/205 [29.3%] vs. 86/228 [37.7%]; $p=0.079$) were observed. Interrater reliability was high ($Kappa = 0.84$ [95% CI: 0.78-0.91]). Profession-specific increases in accountable IPE statements were most notable for medicine (allopathic: 50% [1 to 2]; osteopathic: 500% [zero to 5]), pharmacy (154% [13 to 33]), and psychology (300% [zero to 3]). Content analysis reinforced themes identified in 2012, with clear uptake of the Interprofessional Education Collaborative's (IPEC) language/competencies across multiple professions. **Implications:** The overall accreditation mandate for IPE increased between 2012 and 2015, driven largely by changes to the accreditation documents within medicine, pharmacy, and psychology. This increase, and incorporation of IPEC language/competencies across professions, may facilitate expansion of IPE activities.

Interprofessional Education Opportunities in Faculty-Led Advanced Pharmacy Practice Experiences. Tina Kanmaz, *St. John's University*, John M. Conry, *St. John's University*. **Objectives:** To identify interprofessional education (IPE) opportunities in Advanced Pharmacy Practice Experiences (APPEs) provided by pharmacy practice faculty that are consistent with the Accreditation Council on Pharmacy Education's (ACPE's) Standard on IPE. **Method:** Pharmacy practice faculty were surveyed to identify IPE opportunities for APPE students at their clinical sites. **Results:** A total of 32/40 (80%) faculty responded to the survey. APPE students are provided with the opportunity to interact as a contributing member of an interprofessional team and interact with prescribers in 28/32 (87.5%) sites. Prescribers include physicians (100%), physician assistants (43%), nurse practitioners (61%), dentists (7%), podiatrists (4%) and other (21%). Over 25 types of health professionals within these APPEs were identified. A total of 24/28 (86%) faculty who provide APPE students with opportunities to interact as a member of the interprofessional team identify this experience as being consistent with ACPE's Standard on IPE. Unexpectedly, 6/24 (25%) of faculty who identified their practice site as consistent with ACPE's Standard on IPE declined to allow their APPE to be identified as an IPE experience. Only 4/28 (14%) of faculty incorporated assessment methodology to assess IPE. **Implications:** These results are being utilized by the Office of Experiential Pharmacy Education to assign each student to an APPE IPE learning opportunity. Faculty engagement and development initiatives are needed to better understand ACPE's Standard on IPE, as well as assessment methodologies and tools available to measure IPE outcomes. Additionally, our findings suggest potential challenges we may experience when identifying non-faculty precepted APPEs for IPE.

Interviewing Impact: An Assessment of Personal & Professional Development during Advanced Pharmacy Practice Experiences (APPEs). Gretchen Jehle, *MCPHS University*, Kara Bonaceto, *MCPHS University*, Nicole Carace, *MCPHS University*. **Objectives:** Domain 4 of the CAPE outcomes focuses on personal and professional development which has been adopted within the curricular map of Advanced Pharmacy Practice Experiences (APPEs) at MCPHS University- Worcester/Manchester. Assessment and integration of the affective domain can present a challenge within APPE rotations, in order to document that students have acquired these skills upon graduation. While on APPE rotations, students complete a Professional Development form for attendance at professional development events. The purpose of this study is to determine if student learning objectives (SLO's) within the two subdomains of Self-awareness and Professionalism of Domain 4 are being met by students who attend an

interviewing event while on their APPE rotation. **Method:** Seventy-one Professional Development forms were reviewed by faculty members of the Office of Experiential Education that were submitted by students that had attended an interviewing event. Professional development forms were reviewed using a standardized checklist that corresponded to the fifteen student learning objectives of the 2013 Cape Outcomes Subdomain Self-Awareness (4.1) and Professionalism (4.4). **Results:** Students achieved all nine SLO's within the subdomain of Self-awareness from attending events relating to interviews with metacognition being achieved the most amongst all fifteen SLO's. Students had the opportunity to achieve all SLO's within the subdomain of Professionalism except for one area (4.4.3). **Implications:** Self-awareness and professionalism are difficult to teach in real life scenarios and assess. Allowing students on APPE rotations to attend interviewing events and reflect using a Professional Development form helps students to develop personally and professionally prior to graduation.

Introducing students to Pharmacy Ownership through the Development of an Entrepreneurial APPE Rotation. Sandra W. Rosa, *Albany College of Pharmacy and Health Sciences*, Laurie L. Briceland, *Albany College of Pharmacy and Health Sciences*. **Objectives:** The objective of this rotation was to educate students on the demands and requirements of pharmacy ownership with the view of pursuing independent pharmacy ownership as a career track. **Method:** During the course of a 6 week rotation, 3 students spent 2 weeks in each of 3 independent pharmacies. Each pharmacy offered a different perspective on pharmacy ownership (new start-up, family pharmacy, taking over an established business). In addition to learning the business aspects of each pharmacy the students then researched and developed a business plan for a financially viable patient care service for one of the pharmacies. They also were required to research and develop a business plan for a new pharmacy located in an assigned town in Vermont. In addition, all three students were assigned an advocacy project to reflect the concerns of the owner pharmacists as well as the state pharmacist association. **Results:** The patient care service plans were presented to the owners and one was put into immediate effect. The other two were given serious consideration by the owners to be put in place at a time in the future. The general business plans were reviewed by an expert from McKesson's RxOwnership division and were praised for their thoroughness. The advocacy project on Provider Status in Vermont jumpstarted the movement by the VPA in the state legislature. **Implications:** Independent pharmacy ownership is now viewed as a possible career track for these students. The Providers Status project is now gaining traction in the Vermont legislature.

Introduction to the Pharmaceutical Industry: A Novel Required Experiential Course for First Year PharmD Students. Andrea L Cooper, *Keck Graduate Institute*, Srikanth Kolluru, *Keck Graduate Institute*, Samit Shah, *Keck Graduate Institute*. **Objectives:** (1) To introduce a novel course to PharmD students that exposes them to the pharmaceutical industry. (2) To survey students' perceptions on achievement of course objectives. **Method:** The KGI School of Pharmacy requires all P1 students take an 80 hour Introduction to Industry course to gain direct experience at a pharmaceutical industry site. Instructional elements include preceptor shadowing, preceptor and faculty lectures, assigned readings, and a final project presentation. Using a Likert scale 1 (strongly disagree) and 5 (strongly agree), students were asked to complete two pre and post course surveys. One survey assessed their awareness of pharmacists' roles in the pharmaceutical industry. The second survey assessed self-reported skill level relative to the course objectives. **Results:** Averages for student awareness of pharmacists' roles in the pharmaceutical industry improved from

a pre-course range of 2.43 – 4.36 to a post course range of 3.92 – 4.63. In the pre-course survey, students reported general awareness about pharmacists' career opportunities in the industry without detailed understanding. The second survey averages for pre-course skills assessment ranged from 2.21 -2.81 with an improvement in the post-course range to 3.71– 4.25. **Implications:** We demonstrated that a required Introduction to Industry course improved student knowledge, skills, and awareness of pharmacists' roles in the pharmaceutical industry. Exposure to this non-traditional role in the P1 year may allow students interested in a career in the pharmaceutical industry the ability to focus their curricular electives and extra-curricular experiences to this area of practice earlier in their PharmD education.

Living with Diabetes – An Experiential Activity to Develop Empathy and Perspective. Forrest Batz, *University of Hawaii at Hilo*, Patricia Juscak, *The Daniel K Inouye College of Pharmacy, University of Hawaii at Hilo*. **Objectives:** To provide second professional year PharmD students personal experiences of the challenges involved with adhering to diet and lifestyle recommendations for patients with diabetes. **Method:** All P2 class students were introduced to American Diabetes Association diet, exercise and foot care recommendations. Concurrently with the diabetes unit in their therapeutics course, students were assigned to follow the recommendations for seven days and complete a daily online log of activities and experiences. Following the activity, students discussed their experiences in small group debriefings. Scaled and free-form response data were collected. Descriptive statistics were generated for the scaled data, free-form responses were grouped for similarity. **Results:** 75 students completed the activity. 85% found the activity useful or very useful, 96 % agreed or strongly agreed that the activity helped them develop empathy for patients with diabetes. 52% reported that foods they previously perceived to be "healthy" were "less healthy" or "much less healthy" than expected. 38.6% reported the amount of physical activity needed was more or much more than expected, 48% reported the time to get adequate physical activity was more or much more than expected. In debriefs, students stated that daily blood glucose testing and insulin administration would add significant value to the activity. **Implications:** Students gained appreciation for diet, exercise and other recommendations commonly made to, and empathy for, people living with diabetes. Based on student feedback, daily home blood glucose monitoring and mock insulin administration will be added to future offerings of this activity.

Multiple-Mini Interview (MMI) for Pharmacy School Admissions is Prognostic with Advanced Pharmacy Practice Experience (APPE) Scores. Lindsey E. Dayer, *University of Arkansas for Medical Sciences*, Schwanda K. Flowers, *University of Arkansas for Medical Sciences*, Bradley C. Martin, *University of Arkansas for Medical Sciences*, Catherine E. O'Brien, *University of Arkansas for Medical Sciences*, Angie N. Choi, *University of Arkansas for Medical Sciences*, Janna L. Hawthorne, *Univ. of Arkansas for Medical Sciences*, Kelsey Willis, *University of Arkansas for Medical Sciences College of Pharmacy*, Morgan Ramey, *University of Arkansas for Medical Sciences College of Pharmacy*, Seth D. Heldenbrand, *University of Arkansas for Medical Sciences*. **Objectives:** Determine factors that are associated with advanced pharmacy practice experience performance in the PharmD curriculum and establish whether performance on the MMI independently predicts APPE evaluation scores. **Method:** We have utilized a multi-case MMI in our admissions process since 2008. Students are scored 1-7 (unsatisfactory – outstanding) on each interview. Traditional factors (GPA, PCAT, etc.) are also used in the admissions determination. Pearson product-moment correlation and ordinary least

square regression were performed on admissions data, pharmacy GPA, and APPE evaluation scores for the graduating classes of 2011-2014. This data was used to identify how factors including pharmacy GPA, PCAT, MMI score, age, gender, rurality, resident status, degree, and underrepresented minority status related to APPE performance. **Results:** Students (n=432) had a mean MMI score of 5.5; their mean pharmacy GPA, PCAT and age were 3.14, 73.15, 22.6 years, respectively. Variables that were positively associated with higher APPE scores in the multivariate regression were MMI score ($p=0.001$) and pharmacy GPA ($p=0.007$), while prior graduate degrees trended towards significance ($p=0.072$). Increased age was associated with lower APPE scores ($p=0.038$). The r-square for this model was 0.088. **Implications:** MMI performance utilized for pharmacy school admissions has previously been linked with didactic performance in the PharmD curriculum and now has been shown to be positively associated with overall APPE evaluation scores. The values above indicate that MMI scores and pharmacy GPA can be used to predict performance in the APPE environment.

Organizational Readiness for Early Immersion of Student Pharmacists in Health-system Practice. Kimberly A. Sanders, *University of North Carolina at Chapel Hill*, Michael D. Wolcott, *University of North Carolina at Chapel Hill*, Amanda D'Ostroph, *University of North Carolina at Chapel Hill*, Christopher M. Shea, *University of North Carolina at Chapel Hill*, Jacqueline E. McLaughlin, *University of North Carolina at Chapel Hill*, Nicole R. Pinelli, *University of North Carolina at Chapel Hill*. **Objectives:** To examine health-system organizational readiness for an early immersion program involving second-year student pharmacists engaged in active, direct patient care experiences. **Method:** Students completed a four-week health-system introductory practice experience in operational and clinical pharmacy environments modified to engage students in accountable patient-care roles. Participating preceptors and managers completed a pre-post modified 23-item Organizational Readiness for Implementing Change (ORIC) survey and a 60-minute focus group post-experience. The ORIC survey evaluates categories of implementation needs, support, and value representing change commitment and efficacy. Demographic data were summarized utilizing descriptive statistics. Non-parametric tests were used to measure differences between pre-post survey results. Verbatim transcriptions of focus groups were analyzed for emerging themes around ORIC. **Results:** Twenty pharmacy preceptors (37 ± 8 years, 60% female, 65% clinical pharmacist position, 70% prior preceptor experience) participated in the study. No significant changes in pre-post survey statements were noted except for three of ORIC survey statements ($p < 0.05$) with significant decreases. Sub-analyses demonstrated significantly lower post-survey scores regarding having adequate staff, space, and commitment for implementation, and significantly higher post-survey scores regarding benefit to patients and knowing amount of time and resources needed for implementation. Primary emerging themes from focus groups included concerns about implementation requirements, contextual factors of the experience that affected implementation, and varying perceptions about the value of early immersion across preceptor roles. **Implications:** As pharmacy curricula change to immerse students earlier in their pharmacy education, pharmacy departments must address preceptors' commitment and concerns about adequate resources to support the necessary changes for student engagement.

Peer Mentoring as an Innovative Introductory Pharmacy Practice Experience. Karissa Y. Kim, *University of Cincinnati*, Michael B. Doherty, *University of Cincinnati*, Shauna M. Buring, *University of Cincinnati*. **Objectives:** The University of Cincinnati College of Pharmacy has implemented peer mentoring as an innovative introductory

pharmacy practice experience (PME). In the PME, PY3 students are paired with PY4 mentors for 1 year. PY3s participate in the activities of the PY4 mentor's APPE rotations. Moreover, PY3s complete a variety of objectives under the PY4's mentorship. The objective of this study was to describe and evaluate an innovative peer mentored introductory pharmacy practice experience. **Method:** Students complete course evaluations after each semester, and a PY4 mentor survey was administered for 2 years. Course evaluations from 2012 to 2015 and mentor survey results from 2015 and 2016 were evaluated. **Results:** Since 2012, 387 PY3s and 390 PY4s have participated in the PME. In aggregate, 93.8% and 85.6% of PY3s agreed or strongly agreed that the PME will be helpful in choosing APPE rotations and preparing for APPEs, respectively. 90.7% felt that the PME broadened understanding of pharmacy practice, and 86.4% felt that it provided opportunities to provide pharmaceutical care. From the mentor's perspective, more than 75% of mentors agreed or strongly agreed that 9 of 11 evaluated objectives were helpful for APPE readiness. Only 57.3% and 61.8% of P4s felt that the ethics related assignment and discussion of professionalism and bed-side manners, respectively, were good learning experiences. **Implications:** The University of Cincinnati has successfully implemented peer mentoring as an innovative introductory pharmacy practice experience. This IPPE helped with PY3s APPE readiness.

Perceived Value of Elective Introductory Pharmacy Practice Experiences. Sarah R. Peppard, *Concordia University Wisconsin*, Melissa L. Theesfeld, *Concordia University Wisconsin*. **Objectives:** To provide an elective Introductory Pharmacy Practice Experience (IPPE) for third year students that 1) provides an opportunity to develop their pharmacy practice skills (PPS) and 2) is perceived as valuable to Clinical Instructors (CIs) and students. **Method:** CUWSOP students complete all required IPPE hours during their first two professional years. Elective, longitudinal IPPE rotations are available one day per week at various experiential sites during each semester of the third professional year. Students and CIs were surveyed to determine the frequency of students' exposure to PPS and the perceived value of these rotations, as it relates to clinical practice and professional development. **Results:** Twenty five students and 25 CIs completed the survey during the fall 2015 semester (100% response rate). Students reported having an opportunity to practice the following PPS at least once per rotation day: critical thinking (100%), communication (100%) and use of technology (100%). CIs identified that students had opportunities to practice critical thinking (100%), communication (100%) and education skills (80%) at least once per rotation day. 100% of CIs found having an elective IPPE student to be professionally rewarding and reported that the student's project was valuable to their clinical practice. Students identified that enhanced clinical knowledge (24%), improved communication skills (20%), and an expanded view of the profession (20%) were the most valuable lessons learned. **Implications:** Elective IPPE rotations provide opportunities for students to gain exposure to PPS and are viewed as valuable experiences by both students and CIs.

Perceptions of Pharmacy Graduates on the Research Process after Completion of the Capstone Experience. Cynthia A. Wuller, *Southern Illinois University Edwardsville*, Kaycee Dycus, *Southern Illinois University Edwardsville*. **Objectives:** The purpose of this project is to determine if alumni feel confident of their research process knowledge and can demonstrate their presentation skills developed during the capstone research experience to their current pharmacy practice environment. **Method:** An electronic survey was distributed to graduates from class years 2009 through 2014 from one pharmacy school. The

survey instrument contained three sections; demographic information, confidence with knowledge gained from the research experience, and demonstration of presentation skills in the current practice environment. **Results:** The overall response rate was 43% (209/487). About 50% of alumni reported that completion of the capstone project helped prepare them for their current practice through experience with the research process. When asked if they felt confident in their ability to complete a research project after graduation, about 60% felt confident in their ability to complete a literature search, draw a conclusion from the results and present the results of the research. Selecting the appropriate methodology (33%) and the appropriate statistical test (14%) were areas of weakness. Only 20% reported presenting a poster, submitting their research for possible publication or publication of their research since graduation. **Implications:** Alumni who have completed a capstone research project as part of the curriculum feel confident to apply this knowledge in their current practice setting, however, demonstration of presentation skills is an area that needs further development.

Pharmacy Curriculum Outcomes Assessment as a Predictor of Success on Advanced Pharmacy Practice Experiences. Curtis G. Jefferson, *University of Washington*, Stanley S. Weber, *University of Washington*. **Objectives:** With the ACPE requirement that schools administer the PCOA near the end of the didactic curriculum and schools focusing on measuring APPE readiness, there has been increased discussion around the use of the PCOA as a "high stakes" exam as a gateway to APPEs. The nature of the PCOA as a standardized test focused primarily on demonstration of knowledge has led some to question its utility as an indicator of APPE readiness or predictor of APPE success. **Method:** PCOA percentile scores, Pharmacotherapeutics GPAs, and Pharmacotherapeutics Skills Lab GPAs were compared to APPE performance evaluations for three consecutive PharmD classes to determine if a correlation exists between any of the three potential indicators and success on APPEs. **Results:** Performance on the PCOA, Skills Lab GPA, and Pharmacotherapeutics GPA were all found to have a positive correlation with overall performance on APPEs. Both PCOA scores and Skills Lab GPA correlated positively with four of our ten performance subareas, overlapping on three. Pharmacotherapeutics GPA was found to have a positive correlation with six of the ten performance subareas. In all cases of overlap, the relationship between Pharmacotherapeutics GPA and APPE performance was found to be of greater significance. **Implications:** While a positive correlation exists between PCOA performance and success in some aspects of APPE rotations, it does not appear to be a comprehensive indicator. Schools should explore various measures of APPE readiness and predictors of success to ensure they are using the strongest indicators and are effectively measuring all critical areas of student performance.

Pharmacy Preceptors' Perceived Value of Virtual Experiential Quality Assurance Site Visits. Cheryl L. Clarke, *Drake University*, Kathryn A. Schott, *Drake University*, Austin Arnold, *Drake University*. **Objectives:** To determine the perceived value of experiential quality assurance site visits when conducted through virtual communication as reported by participating preceptors and compare these findings to the perceived value of onsite site visits. **Method:** Site visits were conducted with 29 APPE sites during a 5-month period (12 virtual with 16 preceptors and 17 onsite with 28 preceptors). All sites were located at least 200 miles from campus. Virtual site visits were conducted via video conferencing software. Following each site visit, participating preceptors were invited to complete an online survey to assess perceived value. The survey was adapted from a previously

validated and published survey tool measuring preceptor perceptions of the value of traditional onsite visits. Likert scores were averaged for each survey question and in aggregate. Differences in group results were analyzed using the Mann-Whitney U Test. **Results:** Survey responses were received from 27 (11 virtual and 16 onsite) of 44 invited preceptors for a response rate of 61% (69% virtual and 57% onsite). Likert score averages for questions ranged from 4.18 to 4.64 in the virtual group (4.43 overall) compared to 4.25 to 4.69 in the onsite groups (4.38 overall). No significant difference was found between the virtual and onsite visit groups (Z -score = 0.703, Z -critical = 1.645). **Implications:** With preceptors perceiving value from both onsite and virtual site visits, virtual site visits appear to provide a viable alternative to onsite site visits, with the potential to reduce expenses while strengthening relationships with distant sites.

Preceptor Attitudes Toward an Advanced Pharmacy Practice Experience (APPE) Rotation in Advanced Community Pharmacy Management. Julie Wickman, *Philadelphia College of Osteopathic Medicine*, Brent Rollins, *PCOM School of Pharmacy*. **Objectives:** Assess preceptor attitudes and value of GA Campus PCOM School of Pharmacy's fifth required APPE rotation in advanced community management. **Method:** Data were gathered from 29 preceptors (of 63 possible for a 46% response rate) using a 25-question online survey questionnaire. Preceptors were asked to address the rotation compared to a typical advanced community rotation from an attitudinal and value perspective both in scale and open-ended form. **Results:** Preceptors agreed to strongly agreed the advanced community management rotation provided the student a different experience ($M=4.32$ on 5-point Likert-type scale), is useful ($M=4.58$), and that they would recommend the rotation to both students ($M=4.48$) and fellow preceptors ($M=4.52$). Demographic and open-ended data will be presented as well. **Implications:** The continual theme from employer feedback is the need for graduates to be leaders and managers. PCOM SOP's fifth required rotation focusing on community pharmacy management was designed to answer this call. Based on this early feedback from preceptors, the addition of this rotation has added value to the organization and our students. The next phase is to collect student data which will provide a clear picture of the attitudes and value of the SOP's fifth required rotation in community pharmacy management.

Quality Assurance in Experiential Education Through Preceptor Reflection. Craig D. Cox, *Texas Tech University Health Sciences Center*, Nephthys G Samuel. **Objectives:** At our institution, preceptors are not required to formally reflect on their annual student evaluation summaries. With increased emphasis on continuing professional development, we are exploring ways to further engage our preceptors in this process. The objective of this study was to provide preceptors the opportunity to reflect and identify self-perceived strengths and weaknesses and to use this information to provide guidance on future preceptor development needs. **Method:** A 15-question voluntary survey asked preceptors to describe the importance of the reflection process, including four essay reflection questions targeting their individual preceptor skills. Online surveys were distributed with preceptor annual student evaluation summaries to all adjunct and full-time faculty preceptors. Preceptors were provided 2 weeks to complete. **Results:** 148 of 270 (55%) of preceptors completed the survey. 83% believed reflection was very important. However, only 60% stated they spend time reflecting daily or weekly and only 59% said they always come up with a formal plan to address areas in need of improvement. Preceptor engagement in survey was considered moderate with an average word count of 16 words per reflection question. Providing effective feedback, advocating for the profession, and providing resources were

the top three areas identified by preceptors as requiring improvement. **Implications:** Preceptors recognize the importance of reflection but admit they don't frequently engage in process. Results provide evidence of need to offer formal training on reflection. Identified areas of improvement have become the focus of upcoming preceptor development programs. This served as a critical part of our preceptor quality assurance process.

Quantifying Introductory Pharmacy Practice Experiences – Determining What Student Pharmacists Do at Their Community Pharmacy Sites. Catherine Oswald, *Roseman University of Health Sciences*, Phillip Lawrence, *Roseman University of Health Sciences - South Jordan Campus*. **Objectives:** The purpose of this study is to determine what activities IPPE students at Roseman University of Health Sciences (RUHS) completed during their community IPPE rotations. **Method:** Retrospective data from student pharmacists that completed IPPE rotations during the 2014 – 2015 academic year was collected using a 20 question electronic form. Following each IPPE site visit, students were required to submit a tracking sheet to the RUHS COP's online experiential program documenting the number of times specific tasks related to computer system, telephone, production and patient interaction were completed. **Results:** Data were collected for 506 students (256 P1's for 17 visits; 251 P2's for 18 visits), located on 2 campuses (Nevada and Utah), comprising a total of 8,870 eight-hour IPPE community site visits (70,960 hours total). Activities self-reported by students include: 131,211 prescriptions entered into the computer system (new, refill, insurance adjusted); 32,365 transfers; 36,981 doctor calls; 461,097 prescription filled and labeled; 4,834 immunizations; 34,066 counsels (15,828 OTC; 18,238 Rx); and, 6,814 counseling interventions (5,852 OTC; 962 Rx). While P1 students completed more activities related to inputting prescriptions, fielding doctor calls, and transferring prescriptions than P2 students, P2 students completed more activities related to counseling and immunizations. **Implications:** By quantifying these experiences for students and evaluating this data we may: better implement interventions to ensure comparable experiences at different sites; better understand what our students are prepared to do prior to entering their APPE activities; and, demonstrate the value that student pharmacists provide to their preceptors and rotation sites.

Quantity of Patient Encounters as a Predictor of Test Performance in Advanced Pharmacy Practice Experiences. Chrystian R. Pereira, *University of Minnesota*, Sirikan Rojanasart, *University of Minnesota*, Keri D. Hager, *University of Minnesota*, Ila Harris, *University of Minnesota*, Jean Y. Moon, *University of Minnesota*, Ann M. Philbrick, *University of Minnesota*, Shannon L. Reidt, *University of Minnesota*, Jody L. Lounsbury, *University of Minnesota*. **Objectives:** To determine if the number of patient encounters during ambulatory care advanced pharmacy practice experiences (APPEs) impacts student performance on a knowledge-based post-test. **Method:** Students tracked the number of patients receiving care for 10 identified medical conditions during 5-week ambulatory care APPEs from September 2012 to December 2015. Students also completed a knowledge-based pre-test on the first day and a post-test on the last day of the APPE. The 50-question test was comprised of 10 core knowledge areas. Of the medical conditions tracked, 7 could be mapped directly to the core knowledge areas. Multivariate linear regression examined the relationship between the post-test or change in scores and the number of tracked patient encounters. **Results:** A total of 78 students were evaluated at 6 different APPE sites. Students tracked over 3000 patient encounters (mean 40.2 encounters). After adjusting for student characteristics, a higher quantity of patient encounters was not associated

with improved student performance in the post-test nor with the change between pre- and post-score results (Coefficient = 0.06; $p=0.36$ and Coefficient= 0.004; $p=0.9475$, respectively). Improvement within an individual core knowledge area of the test was not correlated with the number of patient encounters with the corresponding condition. **Implications:** While the quantity of direct patient exposures on ambulatory care APPEs was not associated with improved knowledge test scores overall nor in specific knowledge areas, this study reveals the need for identifying stronger predictors of improvements in student performance in experiential education.

Recommendation and Implementation of an Evaluation Rubric for Assessment of Research IPPE and APPE Rotations. Nicole R. Winston, *Marshall University*, Hasan Koc, *Marshall University*, Shekher Mohan, *Marshall University*. **Objectives:** Current pharmacy education literature lacks examples of evaluation rubrics for assessment of research Introductory and Advanced Pharmacy Practice Experience (IPPE and APPE). Currently following completion of a research IPPE and APPE rotation students are evaluated using a rubric that is designed for students who have completed an ambulatory and/or institutional clinical IPPE and APPE rotations. Our objective was to develop and introduce a 4-point rubric designed to evaluate and assess students on five key competencies to providing a well-rounded research IPPE and APPE rotation. **Method:** Investigators searched current literature for rubrics used in research honors programs and master's programs. These were then mapped against the syllabi developed at Marshall University, School of Pharmacy for research IPPE and APPE rotations. Based on the mapping, a newly designed IPPE and APPE Research elective rubric was built with five core competencies: literacy, synthesis and integration of ideas, originality, contributions to knowledge and leadership skills. Each of these competencies was evaluated based on four proficiency statements and each student was evaluated based on a 4-point rubric (1=unsatisfactory; 4=exceed expectations). **Results:** Preliminary data collected from the Spring 2014 and Fall 2015 semesters from eight students resulted in seven passes (3.11 +/- 0.34 S.D.) and one fail. The mean final score for all eight students was 3.01 +/- 0.43 S.D. **Implications:** Our IPPE and APPE research elective rubric will be used within our experiential component of our curriculum for the evaluation of all future research-based IPPEs and APPEs.

Student Satisfaction with Computer Versus Manually Generated Advanced Pharmacy Practice Experience Schedules. Michael B. Doherty, *University of Cincinnati*, Karissa Y. Kim, *University of Cincinnati*, Jonathan Penn, Shauna M. Buring, *University of Cincinnati*. **Objectives:** To compare student satisfaction between an experiential scheduling platform (PharmAcademic) and traditional manual scheduling for Advanced Pharmacy Practice Experience (APPE) **Method:** Three APPE schedules were created using the students' rotation preference list. Schedules were created using traditional manual scheduling (Traditional), PharmAcademic using rules that mirrored the Traditional method (Mirrored), and PharmAcademic giving priority to scheduling the students' most desired rotations without the use of rules (Student Preferred). APPE schedules were blinded, randomized and provided individually to the students for review. Students were asked to rate their satisfaction with each schedule as it pertained to required APPE's, rotation sequence, ability to assist with career decision making and achieve learning goals, and rank their preference for each schedule. **Results:** Ninety-eight students completed the surveys. Overall, there was no statistically significant difference for any survey item between the schedules. The mean number of rotations students were satisfied with ($F [2, 291] = 0.88, p=0.4$) and the mean number of

rotations students were dissatisfied with ($F [2, 291] = 0.055, p=0.9$) did not differ between groups. Significantly more students were very satisfied with the overall Mirrored schedule ($n=34$) compared to the Student Preferred schedule ($n=20$) ($\chi^2 [1, n=196] = 4.3, p=0.04, \phi=0.2$). **Implications:** Students were equally satisfied with an experiential scheduling platform as traditional manual scheduling method. Satisfaction decreased when schedules were computer generated based on students' most desired preference. Computer generated schedules give a greater perception of fairness and are associated with decreased administrative time.

Student and Preceptor Report of Interprofessional Activities on Required Advanced Pharmacy Practice Experiences. Amanda Margolis, *University of Wisconsin*, Joseph A. Zorek, *University of Wisconsin-Madison*, Beth A. Martin, *University of Wisconsin-Madison*, Mara A. Kieser, *University of Wisconsin-Madison*. **Objectives:** To quantify and characterize fourth year student participation in interprofessional activities while on required advanced pharmacy practices experiences (APPEs). **Method:** Students and preceptors at required APPE rotation sites were surveyed regarding student interprofessional interactions. Respondents were asked to describe the frequency they participated in or observed 17 interprofessional activities on a scale ranging from rarely to daily. Respondents were also asked to describe how much time they interacted with 15 different healthcare professionals (HCPs) on a scale ranging from none to daily. **Results:** Seventy acute care and 69 ambulatory care APPE students completed the survey (100% and 95.8% completion, respectively) over the course of three rotations. Twenty-four acute care preceptors and 36 ambulatory care preceptors completed the survey (36.9% and 33% completion, respectively). The top interprofessional activities students on acute care rotations reported regularly participating in were: rounding with a team (90%), participating in an interprofessional patient care team (77.1%), and making recommendations on an interprofessional team (72.9%). Seventy-six percent of students and 91.3% of preceptors reported synchronous communication with physicians regularly or daily. The top interprofessional activities students on ambulatory care rotations reported regularly participating in were: offering recommendations or clarification by phone (34.8%) and responding to HCP drug information questions (18.8%). Twenty percent of students and 47.2% of preceptors reported synchronous communication with physicians regularly or daily. **Implications:** Fourth year students on required APPE rotations are participating in naturally occurring interprofessional activities. Efforts should be made to make these experiences intentional to target interprofessional educational competencies.

Student Awareness and Willingness to Participate in International Pharmacy Experiences. Julia Sessa, *Long Island University*, Suzanna Gim, *Long Island University*. **Objectives:** To identify any challenges or barriers associated with student interest that a pharmacy program might encounter when initiating international opportunities abroad. **Method:** A nine-item survey was developed and administered to second and third professional year students during the Fall 2010 semester to assess student interest in international experiences and knowledge of global health. Survey items measuring interest in international pharmacy, involvement in community service, and potential factors influencing participation in international experiences were included. Additional survey items aimed to gauge student knowledge of a pharmacist's role in global health. Several survey items were rated on Likert-type scales ranging from 5=very interested to 1=not at all interested, with some questions requiring a short written response. **Results:** Three hundred seventy-three students completed the survey. The majority of study respondents (73.8%) expressed some level of

interest in international pharmacy. However, only 8.6% of participants identified as having knowledge and understanding of international pharmacy. Most participants (76.1%) indicated that pharmacists have a role in global health, however over a third of the students (34.5%) could not articulate what that role entailed. Factors influencing student willingness to participate in international experiences included cost, ability to receive course credit, and location. **Implications:** This survey has provided insight to introduction of international experiences in the pharmacy curriculum. Students are interested in global health, but lack awareness. More didactic and experiential education opportunities amenable to student preferences are fundamental to successful implementation in the pharmacy curriculum.

Student-Perceived Impact of Paid Pharmacy Internships on Academic and Clinical Performance. Timothy M. Burkart, *The University of Findlay*, Tonya Dauterman, *The University of Findlay*, Debra L. Parker, *The University of Findlay*, Marina Ishak, Jennifer Sze. **Objectives:** Primary objective: determine the number of pharmacy students, third (P3) to sixth (P6) year, who have a non-required, paid pharmacy internship and determine the student-perceived impact on academic performance. Secondary objective: assess confidence level (expressed by graduating students) to work as an entry-level pharmacist and correlate this to non-required internship experiences. **Method:** Method: Per American Council on Pharmacy Education (ACPE), pharmacy students must complete Introduction to Pharmacy Practice Experiences (IPPEs) and Advanced Pharmacy Practice Experiences (APPEs) hours during the four professional years. A retrospective questionnaire was developed to survey professional level pharmacy students, limited to the University of Findlay Pharmacy students. Chi Square was used for nominal data, and ANOVA for continuous data. **Results:** Results: Two hundred eleven students responded. One hundred thirty-five (65%) believed non-required pharmacy internship positive impacted their academic performance; 7 (3%) perceived non-required pharmacy internships negatively impact performance. Forty-eight out of sixty (80%) graduating students, however, agreed that APPEs prepared them to obtain an entry-level pharmacist position without the need for non-required paid pharmacy internship. **Implications:** Implications: A large number of pharmacy students indicated a positive impact on academic performance from their non-required paid pharmacy internship; however, results were not statistically significant. On the other hand, the majority of graduating students agreed APPEs alone prepare the student to enter the workforce as a competent professional. Further research is encouraged for more robust data with a larger sample size and perhaps annual reassessment of the same population to further identify the value of non-required pharmacy internships on perceived academic performance.

Students' Perspective of Debates as a Pedagogy in a Critical Care Elective. Anthony Hawkins, *The University of Georgia*, Michael J. Fulford, *The University of Georgia*, Stephanie V Phan, *University of Georgia College of Pharmacy*. **Objectives:** Evaluate student perceptions of debate-style learning to develop competency in skills including literature search and evaluation, critical thinking, and content mastery **Method:** In this elective course, students selected 15 critical care topics to debate. Students advocated for randomly assigned, pre-determined therapies. Evidence-based medicine and practical aspects of treatment, such as economic and quality-of-life factors were used. After each class, students were required to write a two-minute position paper selecting the best treatment option. A blinded focus group was conducted at the completion of the course, which centered on student perception of the courses impact on their learning in the Center for the Advancement of Pharmacy Education (CAPE) domains 2 through 4.

Results: The focus group was recorded and transcribed by an external administrator. The transcript was analyzed using word clouds and qualitative methods to identify patterns. Emerging descriptors were “probably, different, article, critical care, things, and physician.” Analysis of the context of responses revealed students “probably” spent more time on this class than others because understanding disease states and other “things” were imperative before engaging in debates. The ability to conduct patient-centered literature searches and evaluate “articles” appeared to benefit from this pedagogy. Students appreciated the “physician” perspective and that “different” solutions can emerge from the same problems. **Implications:** Students’ perceptions of learning from this pedagogy align directly with CAPE learning outcomes related to literature evaluation, interprofessional collaboration, and problem-solving. This pedagogy may offer opportunities to engage students in learning along the affective domains highlighted in CAPE domains 3 and 4.

Survey of Ambulatory Care Preceptors Regarding SOAP Note Writing in Advanced Pharmacy Practice Experiences (APPEs). Miranda R. Andrus, *Auburn University*, Dana G. Carroll, *Auburn University*, Katelin Lisenby, *Auburn University*, Lynn Stevenson, *Auburn University*, Philippe Gaillard, *Auburn University*, Cherry W. Jackson, *Auburn University*. **Objectives:** Fourth year pharmacy students (P4s) routinely write SOAP notes in ambulatory care APPEs. While many preceptors provide formative assessment of SOAPs, there is a lack of validated, objective assessment methods in the literature. The objective of this study was to gather information from preceptors regarding SOAP note writing experiences and assessment methods currently utilized during ambulatory care APPEs. **Method:** Ambulatory care preceptors from five schools of pharmacy across the country were surveyed (n=205). The survey included questions regarding the quantity and type of SOAP notes written by P4s, and the feedback and assessment methods used. The survey also asked about the time required for providing feedback, how prepared P4s are for writing SOAP notes, and the areas students struggle with the most. **Results:** The overall response rate was 62% (128/205) with 75% (96/128) of respondents reporting that students write SOAP notes on their rotation. About 50% require problem-focused notes vs. comprehensive notes. The majority of preceptors (84%) do not formally grade SOAP notes, however most (76%) require revisions to SOAP notes after formative feedback. Fifty-one percent of preceptors spend less than 10 minutes providing feedback on notes, while 34% spend 11-20 minutes. Of those who grade SOAPs (n=15), 10 (67%) use a rubric, and 2 rubrics are validated. Preceptors feel that students struggle the most with the assessment portion of notes, and 51% felt that students were prepared or very prepared to write SOAPs. **Implications:** There is a need for validated, objective assessments of SOAP note writing in ambulatory care APPE experiences.

The Intention/Reflection Practice: A Structured Approach to Promoting Self-Awareness and Measuring Student Learning During APPEs. Gardner A. Lepp, *University of Minnesota*, Whitney Maxwell, *South Carolina College of Pharmacy*, Brandon J. Sucher, *Regis University*, Keri D. Hager, *University of Minnesota*, Kerry K. Fierke, *University of Minnesota*. **Objectives:** To design, implement, and evaluate an Intention/Reflection (I/R) practice for Advanced Pharmacy Practice Experiences (APPEs). **Method:** A convenience sample of five APPEs of varying length at three universities were included. During each APPE, students participated in an I/R practice designed to 1) identify and track individual learning gains and student interests; 2) promote engagement in the experience; and 3) foster self-awareness and motivation. Students responded to a set of questions related to the

aims above at the beginning, mid-point, and end of their APPE. Responses to I/R questions were descriptively coded and grouped into themes and sub-themes. A survey was administered to preceptors to assess their perceived value of the I/R practice. **Results:** Eleven students completed an APPE with the I/R practice. Fifty-five percent of students indicated the I/R practice enhanced their APPE by helping them focus on goals and interests, and forty-six percent indicated the I/R practice positively affected their learning. Additional themes included promotion of self-discovery and application through creating a plan and achieving goals. The duration of each APPE did not significantly affect learning outcomes. All preceptors indicated that the I/R practice added value for themselves and their students. Specifically, the I/R practice allowed them to tailor APPE learning activities to align with each student's individual learning goals and intentions. **Implications:** Students report the I/R practice enhanced their APPE, and preceptors individualized APPEs for each student using the I/R practice. Preceptors plan to continue and expand the I/R practice during APPEs at three universities.

The Self-Aware Student: Do Students Engage in Self-Awareness When Determining Rotation Goals? Eric H. Gilliam, *University of Colorado*, Meghan N. Jeffres, *University of Colorado*, Jason Brunner, *University of Colorado*, Megan E. Thompson, *University of Colorado*, Wesley A. Nuffer, *University of Colorado*. **Objectives:** The CAPE 2013 Affective Domain mandates students develop self-awareness of personal attributes and emotions affecting professional growth. Students should self-identify needs, create and implement goals, and evaluate success. Third-year pharmacy students completing a six-week Advanced Introductory Pharmacy Practice Experience (aIPPE) created three goals prior to their aIPPE and completed a post-rotation reflection assignment describing level of achievement of their most successful goal. This evaluation project assesses pharmacy students' ability to identify goals and reflect upon goal achievement. **Method:** The post-reflection assignment was evaluated using a standardized rubric evaluating four domains: student determined goal, description of goal's value to professional development, plan for achieving goal, and self-awareness during pursuit of goal. Each domain was assessed using a 3-point scale describing the quality of the response, 0 (below expectations), 1 (meets expectations), and 2 points (exceeds expectations). Two faculty members evaluated 144 assignments against the rubric. A third faculty member decided non-concordant evaluations. **Results:** Most students meet or exceeded expectations in the areas of writing a goal statement and description of goal's value to professional development (97.2% and 94.4%, respectively). Conversely 79.2% of students were below expectations in regards to planning goal achievement. 86.3% of students meet or exceeded expectations in regards to self-awareness of emotion in pursuit of goal and 95.1% in regards to self-awareness of behavior in pursuit of the goal. **Implications:** Students may need additional guidance and training in determining strategies for goal achievement. Additionally, students need to further develop emotional awareness in relation to professional development.

Understanding Student APPE Site Selections: Identifying Sources of Information. Kate Newman, *Southern Illinois University Edwardsville*. **Objectives:** This study was conducted to determine what sources of information students utilize when selecting APPE rotation sites and to evaluate which methods students find most useful. **Method:** A survey was conducted including 3rd year professional pharmacy students who had recently submitted APPE site preferences. The survey instrument listed various sources of information that could be consulted when making rotation selections. Students were asked to select all of the sources they employed during the APPE selection process

and to identify which source they felt was most valuable. Additionally, students were asked about their perception of informational podcasts which are utilized as one method of providing information about rotation sites. **Results:** Overall, 75 of 79 (95%) surveys were completed and included in this analysis. The most frequently identified sources of information utilized when making rotation decisions were written descriptions (76%), fellow classmates (65%), former APPE students (53%) and previous experiences during IPPE rotations (41%). Additionally, 21 of 75 students indicated they viewed at least one informational podcast when selecting rotation sites. Of the students who utilized at least one podcast, 28% listed the podcast as being the most useful source of information. **Implications:** In order to help students make informed APPE selections, it's important to provide accurate information in a format which clearly conveys details about the rotation experience. While written descriptions continue to be the most commonly utilized source of information, it appears there is a high rate of satisfaction with the podcast method.

Use of Academic Success Plans in Advanced Pharmacy Practice Experiences (APPEs). C. Lea Bonner, *Mercer University*, Lindsey H. Welch, *The University of Georgia*. **Objectives:** To quantify and evaluate the impact of P4 academic success plans (ASP) assigned by the Offices of Experiential Education (OEE) at two Colleges during academic year 2014-2015. **Method:** ASPs were assigned if a student had either 1) "needs development" documented by preceptors for the same learning objective during more than one APPE, 2) documented professionalism issues, or 3) poor overall performance during an APPE as determined by the OEE. **Results:** Forty-four total ASPs were assigned to 33 students during 2014-2015. Mercer University (MU) assigned 28 ASPs to 19 students and University of Georgia (UGA) assigned 16 ASPs to 14 students. Of the ASPs assigned, three students were assigned two ASPs and four students were assigned three ASPs. The majority of ASPs (n=34, 77%) were assigned due to preceptor-reported performance deficiencies; ten ASPs (22.7%) were assigned due to professionalism concerns. After completion of an ASP, seventy-four percent of students (n=26) were able to consistently achieve a rating of "competent" or "exceeds expectations" for the remainder of the academic year. **Implications:** Prior to 2014-2015, OEE student interventions were triggered by mid-point and/or final grades earned during an APPE, not necessarily achievement of specific learning objectives. ASPs are a non-punitive means to address flagrant and subtle performance deficiencies and professionalism concerns. Using tenets of SMART goal-setting, ASPs allow for self-reflection on competencies and performance while creating a student-driven improvement plan.

Theoretical Models

Continuous Quality Improvement to Implement Novel Introductory Pharmacy Practice Experiences at an Academic Medical Center. Valerie B. Clinard, *University of California, San Francisco*, Ashley Thompson, *University of California at San Francisco*. **Objectives:** Describe a continuous quality improvement structure utilized to implement, assess, and improve an Introductory Pharmacy Practice Experience (IPPE). **Method:** 91 IPPE students completed two week blocks at an academic medical center June to September 2015. Electronic survey tools were utilized to assess 1) the optimal student pathway 2) preceptor availability 3) perceived value. A post-rotational survey with a scoring system of 1 (strongly disagree) to 5 (strongly agree) was utilized to assess student and preceptor perceived value. Impact was documented via student projects. **Results:** 11 to 15 students were assigned each block across the University of California San

Francisco Medical Centers. Rotation blocks were clinical, operational, or a combination of both (hybrid) in 10 service areas. Preceptor surveys indicated a perceived high value of working with IPPE students regardless of rotation, with a continued score greater than 4 (N=30). Overall student survey response rate was 71%. Students maintained a high perceived value of the clinical pathways with a score > 4 across all blocks. Students assigned operational pathways had an initial perceived value of 2.2. Quality improvement processes were focused in these areas. Changes were made each block until all pathways had a perceived value of greater than 4. Student projects included medication use evaluations, pharmacoeconomic projects, research data collection, and operations projects. **Implications:** The Accreditation Council for Pharmacy Education (ACPE) requires pharmacy students to complete IPPE hours; however, no standard guidance for structuring individual activities exists. A method to implement, assess, and improve new IPPE rotations is described.

Integration of Active Learning Andragogy Based on a Flipped Learning Model for IPPE. Nancy A. Alvarez, *Chapman University*, Rebecca Kammer, *Flip It Consulting*. **Objectives:** Year 1-IPPE has been intentionally designed to integrate active learning andragogy based on a flipped learning model. Often, clinical practice engagement is relegated to observation and highly varied making student pharmacist attainment of equivalent program learning objectives challenging. This describes how use of an active learning conceptual framework supports learning plan development for early IPPE that enable students to initiate self-directed learning. **Method:** Active learning (three core aspects of info gathering, active participation in learning, and reflection) is the cornerstone of IPPE emphasizing what students can “do” early. Development of six learning plans focused students upon discrete skills development (medication history/information gathering, health information delivery, or health screenings) based first trimester coursework exposure. Intentional design promoted equivalent learning experiences despite site assignment variation, and fostered student self-directed learning. Learning plans served as roadmaps for experiential educators to serve as facilitators of student learning rather than teachers. **Results:** (1) Quantitative evidence: planned learning strategies resulting in intended student learning objectives evaluated using two forms of assessment, clinical experience grades, and rubric-graded critical reflection assignment. (2) Qualitative evidence: 1) review of pre-event worksheets by students including information on participation; 2) review of experiential educator/site evaluation by students; 3) information from course-end, collaborative, guided learning reflection activity. **Implications:** It is innovative for an experiential education office to plan and execute IPPE using intentionally-designed learning plans that incorporate core active learning aspects and enable equivalent learning experiences as schools are called to deliver increasingly robust experiential education curricular design to ensure competent, confident, practice- and team-ready pharmacists.

Many Doors, One Key: An IPPE Collaboration Targeting APPE Readiness, Faculty Workload and Patient Outcomes. Angela Brownfield, *University of Missouri-Kansas City*, Shannon Ludwig, *University of Missouri Health Care*, Laura Butkovich, *University of Missouri Health Care*, Ryan Camden, *University of Missouri Health Care*, Jamie Koerner, *University of Missouri-Kansas City*, Roger W. Sommi, *University of Missouri-Kansas City*. **Objectives:** Program was intentionally designed to: ● Provide direct patient care opportunities for students on a longitudinal IPPE ● Re-balance faculty workload to enhance opportunities for developing practice skills/attitudes/behaviors ● Impact institutional quality indicators ● Enhance achievement of Pre-APPE Core Domains and Abilities ● Increase local teaching in-

stitution collaboration based on mutual needs/interests/opportunities **Method:** IPPE was restructured from a two semester longitudinal, full-time faculty based student experience to a structure where students spend one semester in a more intense experience with full-time faculty in their practice setting and one semester working with adjunct faculty in an academic medical center providing patient education on high risk medications. Students also participate in training and simulation on patient counseling, use of the EMR, and documentation of patient care activities. Students complete a 36-question survey to characterize the experience, provide feedback for improvement, determine to what degree performance competencies were met, and assess their confidence and APPE readiness. **Results:** Student response rate for the first semester survey was 100% (n=15) and identified satisfactory achievement of all performance competencies as well as increased student confidence. Faculty workload was shifted to provide a lower student to faculty ratio at the practice site. The impact on institutional quality indicators is currently under analysis. **Implications:** This progressive, instructional method is viewed by students and faculty/preceptors as a positive model for collaboration. The model is being replicated at other IPPE sites within the School and has the potential for further growth and impact, particularly within the scope of services provided by the students.

Preceptor Continuing Professional Development – designing a document form to engage your preceptors in CPD. Erin L. Johanson, *Roseman University of Health Sciences*, Catherine Oswald, *Roseman University of Health Sciences*, Darla Zarley, *Roseman University of Health Sciences*. **Objectives:** 1. Address ACPE Standards 2016 (20.3 and 20.4) and CAPE Outcomes 2013 (Domain 4-Personal and Professional Development). 2. Introduce preceptors to the purpose of continuing professional development. 3. Design a form for documentation of preceptor CPD activities. **Method:** The experiential team including IPPE and APPE Coordinators in the College of Pharmacy, Continuing Education Director of the University, outside experts on continuing professional development in the health professions and preceptors were the involved participants. After review of the ACPE standards 2016, the experiential team determined that CPD would be a focus of efforts for its 2015 continuing education programming for preceptors. In conjunction with the CE Director of the university, a national expert on CPD for health professions was consulted and it was determined that extensive education and documentation for preceptors would be necessary to meet these goals and offer opportunity for intervention. **Results:** A ten-item “Continuing Professional Development Plan for Preceptors” documentation form was created that can be implemented online or in-person. The form documents and utilizes activities of planning, learning, evaluating, and reflecting to improve the quality of pharmacy practice experiences for both students and preceptors. **Implications:** 1. Design of a Continuous Professional Development (CPD) Plan for preceptor development will benefit all accredited colleges of pharmacy who wish to implement similar programs. 2. Providing a means of documenting preceptor CPD will enable interventions to take place benefitting both preceptor and student learning experiences.

Preparing for a Successful ACPE Site Visit – An Experiential Perspective. Erin L. Johanson, *Roseman University of Health Sciences*, Darla Zarley, *Roseman University of Health Sciences*, Catherine Oswald, *Roseman University of Health Sciences*. **Objectives:** 1. Identify ACPE Standards 2016 specific to experiential education requirements for the PharmD curriculum. 2. Review personnel and materials needed for a successful site visit. 3. Illustrate successful methods for ensuring experiential team professional and emotional well-being. **Method:** The purpose of this program is to share personal

perspectives on preparation and survival of an ACPE accreditation site visit with other experiential education section members interested in incorporating ACPE Standards 2016 and CAPE Outcomes 2013 into their experiential curriculums. **Results:** The experiential team prepared themselves by reviewing standards related to student, preceptors, experiential training sites, and the curriculum. Various members of the experiential team were part of subcommittees for consistency in self-study reports and communication across multiple campuses. Unique ways to address Standards 2016 CAPE 2013 Outcomes included creation of a personalized preceptor orientation video and interactive quiz as development of a preceptor webpage to aid in accessing information including policies, resources, continuing professional development and preceptor trainings. Through collective efforts the College of Pharmacy was granted an 8 year term of accreditation. **Implications:** Experiential education section members have a vested interest in maintaining the quality of their programs whilst incorporating ACPE Standards 2016 and CAPE Outcomes 2013. Accreditation site visits can often be very time consuming and stressful for those involved. By sharing our experience with others we hope to provide a perspective that other programs may consider incorporating into their site visit preparation.

Utilizing Pharmacy Students and Residents in a Healthcare for the Homeless Clinic to Enhance Care. Jaime R. Hornecker, *University of Wyoming*, Michelle L. Hilaire, *University of Wyoming*. **Objectives:** Healthcare facilities that provide care to underserved populations, including the homeless and working poor, are often understaffed. Providing pharmacy-related services and expertise can be a challenge, despite the added value that pharmacists bring to the healthcare team. Through opportunities offered during an ambulatory care APPE and a PGY1 residency, our program was able to utilize pharmacy students and residents to expand services and enhance patient care. **Method:** A second location at a healthcare for the homeless clinic was added to an existing PGY1 pharmacy residency program established at a family medicine residency. A faculty pharmacist and two residents provide a mix of staffing in a small dispensary and clinical pharmacy services, with medications obtained primarily through 340b, state and community medication donations, and medication assistance programs. Pharmacy students play an integral role in providing care. **Results:** Significant improvements in medication access, utilization of pharmacy resources, and interprofessional collaboration have been observed since pharmacists started providing care. Patients meet with a pharmacist or student pharmacist for counseling and to discuss any medication-related concerns. Anecdotally, pharmacy students and residents alike have an improved understanding of resources available to patients to assist with obtaining medications and decreasing costs. **Implications:** The site has become a valued opportunity for students and residents who are able to experience the nuances of caring for the homeless and other underserved. Outside-the-box critical thinking and creativity must be used in providing care to this unique patient population, an important skill set for any pharmacist.

LIBRARY AND INFORMATION SCIENCE Completed Research

A Longitudinal Assessment of the Impact of Library Instruction on Pharmacy Students' Information Literacy Skills. Jennifer R. Martin, *The University of Arizona*, Marion K. Slack, *The University of Arizona*, Sandra S Kramer, *University of Arizona Health Sciences Library*. **Objectives:** To assess change in information literacy skills from first year to fourth year. **Method:** Using a longitudinal study

design, a survey tool was developed to assess the change in skills of a pharmacy class over a four-year period. It was administered during orientation, prior to any course instruction, and again during the last week of their program. Questions focused on basic library skills and demographic information was also collected. Responses were scored using a point system. A t-test was used to compare first year and fourth year means. **Results:** A total of 100 surveys were returned out of the class of 101 (99%) during their first year of orientation and 52 (53%) surveys were returned at the end of 4 years. Students in Year 4 performed better on all skills than Year 1 ($p < 0.004$) except for knowing what information is in the library catalog, and consulting a librarian. Students in Year 4 were more familiar with citation information, recognizing primary, secondary and tertiary resources, familiar with citation tools, and self-assessed knowledge was rated higher. Students found the periodic lectures throughout the curriculum helpful in addition to step-by-step instruction. **Implications:** There were improvements in their skills and feedback from the class indicated that the library instruction was very adequate and helpful. It does indicate that library instruction throughout the pharmacy curriculum is important to developing their information literacy skills.

Assessing Information Resource Access and Habits of Use Among Pharmacists. Franklin D Sayre, *University of Minnesota*, Shannon L. Reidt, *University of Minnesota*, Christene M. Jolowsky, *University of Minnesota*, Raquel Rodriguez, *University of Minnesota College of Pharmacy*, Eileen Harwood, Scot Lunos. **Objectives:** To determine what information resources pharmacists have access to in their workplace and what factors influence what resources they choose to use. **Method:** A 16 item survey was administered electronically to pharmacists with valid e-mails with the Minnesota Board of Pharmacy. The questions related to access to resources, frequency of resource use, and factors impacting use. Demographic information collected included practice setting, education, years in practice, and precepting activities. **Results:** The survey response rate was 19.8% ($n=1045/5270$). Most respondents practice in a community (37%) or hospital (36%) setting, and 60% reported precepting pharmacy students. Resources with the highest access were Facts & Comparisons (70%), Micromedex (63%) and Pharmacist's Letter (60%). When asked about resources to which respondents wished they had access, the most requested resources were Pharmacist's Letter (25%), Lexi-Comp (25%), Micromedex (21%), and Natural Standard (21%). Differences in resources use based on urban or rural practice setting were observed, with community rural practitioners showing more access to Drug Information Handbook (56% vs 43%), and Pharmacist's Letter (79% vs 65%), than urban practitioners, who showed more access to Drug Facts and Comparisons (85% vs 75%), Micromedex (35% vs 28%), and UpToDate (23% vs 15%). **Implications:** This survey identifies gaps between the resources covered in pharmacy curriculum and resources available in practice. Although pharmacists have access to common drug resources, they often lack access to resources typically available in an academic settings.

Assessment of Perceived Stress and Coping Mechanisms in a School of Pharmacy Population. Christina M. Seeger, *University of the Incarnate Word*, Anita T. Mosley, *University of the Incarnate Word*, Jeffrey T. Copeland, *University of the Incarnate Word*, Mathew C. Garber, *University of the Incarnate Word*. **Objectives:** To assess sources of stress and coping mechanisms used by pharmacy students, faculty and staff and their relationship to perceived stress. **Method:** A survey was sent to students, faculty and staff comprised of the Perceived Stress Scale (PSS10) and Brief COPE. Exercise and prescribed medication use as coping strategies were added, due to the belief that

they could be significant. Perceived stress was measured using the validated PSS10, which asks respondents ten questions to determine how stressful they perceived their lives to be during the last month. To assess coping mechanisms in our population we utilized the Brief COPE. The PSS10 and the Brief COPE have been used in other pharmacy student populations. **Results:** The perceived stress of the students was significantly higher than other studied populations, but consistent with other pharmacy student populations. Students in their second or third year of the curriculum were more likely to report higher levels of stress than students in the first or fourth year. The most frequently reported coping mechanisms were the adaptive strategies of active coping, acceptance and planning. Maladaptive strategies of behavioral disengagement, venting and self-blame were significantly associated with higher perceived stress scores. Exercise coping mechanisms were significantly associated with lower perceived stress scores, while use of prescribed medications was not statistically significant. **Implications:** Inclusion of exercise as coping mechanism is appropriate for this population. Students who regularly participate in physical exercise should be encouraged to continue this practice as it may reduce perceived stress while in a rigorous academic program.

Development of a Journal Club Assignment at a Distance-Education College of Pharmacy. Christopher S. Wisniewski, *South Carolina College of Pharmacy*. **Objectives:** To describe a journal club (JC) group project at a college of pharmacy providing distance education (DE) at multiple sites **Method:** In a 1-semester, stand-alone, DE drug information (DI) course, students are assigned a JC group presentation. This report describes how project methods were modified in order to reduce grade variability via a single presentation evaluator. Students originally presented an assigned article live in front of a volunteer faculty evaluator and the remainder of the class. The project was modified so students' recorded presentations are evaluated solely by the course coordinator. A description of the project logistics is provided. Student project scores were compared before and after the modification via student's t-test. **Results:** Students view a recorded lecture on JCs and a sample JC presentation. Cases are provided to student groups and these groups submit an article that applies to the case. This submission is graded, then the course coordinator-selected article is provided for the group to analyze via a JC presentation. Students record presentations via PowerPoint and submit files to Blackboard®, followed by peer evaluation of presentations developed on the opposite campus. Project grades averaged 90.72% (\pm 4.53) in the pre-recording project period (n=367) compared with 89.13% (\pm 4.97) after (n=1100) (p <.001). Recording presentations increased lecture time by 8 hours. **Implications:** Recording JC presentations reduced project grade averages significantly and increased standard deviation of grades, though available lecture time increased by 8 hours.

Effect of Information Literacy Instruction on First-Year Pharmacy Students' Performance and Perception of Information Skills. Natalia L Malesa, *University of Texas at Austin*, Holli Temple, *University of Texas at Austin*, Kenneth A. Lawson, *University of Texas at Austin*, Hugh D. Smyth, *University of Texas at Austin*, Robert O. Williams III, *University of Texas at Austin*. **Objectives:** To determine whether or not: a) integrating information literacy training into required first-year pharmacy coursework affects students' abilities to find, retrieve, analyze, and use information; and b) student performance affects student perception of information skills. **Method:** Syllabi from Pharmaceutics and Introduction to Patient Care were reviewed to identify course objectives matching the Association of College and Research Libraries (ACRL) Information Literacy Standards for Science and Engineering/Technology. Seventeen ACRL learning outcomes were

identified as best meeting course objectives. Learning outcomes were used to develop two interactive workshops on fundamental information skills and using biomedical resources to conduct research. In both courses, students completed assignments that focused on developing effective search strategies and evaluating information. Students' performances and perceptions of information skills were assessed at four intervals (August 2014, December 2014, May 2015, October 2015) using a questionnaire based on ACRL learning outcomes. Results were analyzed using SPSS. **Results:** A mixed model was run over 211 observations from 94 participants while controlling for education level. Both mean performance and perception scores improved over time. Mean performance scores were 56.05, 67.03, 72.92, and 77.90 out of 100. Mean perception scores were 85.31, 88.77, 95.39, and 96.46 out of 140. In both performance and perception, the increase from the first to the final score was significant (p <0.001). Students' performances significantly affected their perceptions of information skills (p =0.019). **Implications:** Incorporating information literacy instruction into required first-year pharmacy coursework improves students' information skills and their confidence in these skills.

Effects of Time Limits During a Drug Information (DI) Exam and Student Performance. Miki Goldwire, *Regis University*, Robert Haight, *Regis University*, Marianne McCollum, *Regis University*. **Objectives:** To determine the relationship between exam score and time spent on exam. **Method:** Integrated Literature Evaluation-I (ILE) is a second-year course covering the systematic approach to answering DI questions; course material is delivered using team-based learning. Two multiple choice (MC) DI exams (exam1 and exam2) are administered in two parts. Part-1 is applied (searching drug databases for answers to DI questions, 10MC) and part-2 is knowledge comprehension (20-30MC). Students complete both parts on-line in any order in an 110-minute session. Descriptive statistics characterized student demographics and scores. Correlation statistics and linear regression analysis determined associations between test scores and time per exam. Logistic regression and Chi-square determined associations between scores <85%, time <25minutes, and students completing part1 first. Three-years of data were analyzed. **Results:** From 2013-2015, students (n=211) who completed ILE-I had an average age of 29+/-6 years with 39% female. No correlation existed between time and score on either exam1 (r =-0.026, p =0.7) or exam2 (r =-0.081, p =0.237). Exam1-part1 time correlated weakly with exam1-part1 score (r =-0.277, p =0.000) and exam1-part2 score (r =0.190, p =0.005). Students starting with part2 on exam1 had 83% greater odds of scoring <85% on part2 (OR=1.826;95%CI,1.02-3.272) and students who completed exam1-part2 in <25 minutes had 117% greater odds of scoring <85% on part 2 (OR=2.17;95%CI,1.137-4.161). Results for exam2 were not statistically significant. **Implications:** For the first exam in ILE-I, providing students the choice of which part of a two-part DI exam to begin with (applied or knowledge comprehension) and the choice of how much time to spend on each part may not be in the student's best interest.

Evaluation of the "Gender Gap" on Editorial Boards of Leading Medicine, Pharmacy, and Nursing Journals. Katherine V Zych, *University of Illinois at Chicago*, Katie Suda, *University of Illinois Chicago School of Pharmacy*, Tina Griffin, *University of Illinois at Chicago*, Elizabeth Tarlov, *Hines VA Hospital*, Ben Gerber, *University of Illinois at Chicago*, Michael Gabay, *University of Illinois at Chicago*. **Objectives:** Previous investigations have shown that women are underrepresented on editorial boards across many clinical health science journals. The aim of this study was to compare gender ratios of the editorial boards of 21 leading journals in medicine, pharmacy, and

nursing, and investigate trends over the past 20 years. **Method:** The gender composition of editorial boards for the top seven journals by impact factor for each discipline was obtained. Contingency tables and Cochran-Armitage trend analyses were applied in SAS; $p < 0.05$ was considered significant. **Results:** 6,505 editorial board members were identified (0.7% unknown gender). In leading medicine, pharmacy, and nursing journals, women composed 20%, 6%, and 83% of editors-in-charge, and 37%, 37%, and 87% of editorial leadership (editor in-charge/associate/executive/deputy editors), respectively ($p < 0.0001$). For the overall editorial board, pharmacy journals had significantly more women represented when compared to medicine journals (30% vs. 15%; $p < 0.0001$). Over time, there was an increasing trend in women represented on medicine and pharmacy editorial boards, while men increased in nursing ($p < 0.02$ for trend). Nursing journals had the highest increase in gender balance over the 20 years ($p = 0.8076$). **Implications:** In medicine and pharmacy, women continue to lag behind male colleagues in holding editorial board positions, although the gap appears to be narrowing. The rate of improved gender balance was greatest for nursing journals. To our knowledge, this is the first study of women's participation on editorial boards across multiple health disciplines. Continued tracking of editorial boards is critical to recognition of gender inequities in the field of academic medicine.

Preference and Frequency of Using Mobile Apps for Drug Information Among Pharmacy Students. Sharon K. Park, *Notre Dame of Maryland University*, Miriam C. Purnell, *University of Maryland Eastern Shore*, Maisha K. Freeman, *Samford University*, Racquel V Reese, Stefan Varga. **Objectives:** The use of mobile devices among health professionals for accessing drug information (DI) is increasing; however, the extent to which student pharmacists use the mobile applications (Apps) is unknown. This study investigated the preference, frequency, and perception of mobile DI App use among student pharmacists from three pharmacy schools. **Method:** Investigators from three pharmacy schools generated a 13-question survey relating to students' demographics, type of mobile operating system (Apple or Android) owned, number and frequency of DI Apps used, whether the Apps were free or purchased, and perception about the accuracy of purchased versus free Apps, by using a list of top 20 DI Apps (based on number of downloads for each App from the App store). Survey questions were validated by two pharmacy faculty and two student pharmacists and electronically disseminated via SurveyMonkey to all current P1 through P4 students. Data were analyzed descriptively and statistically with alpha less than 0.05. **Results:** A majority of students were women and between the ages of 21-30 years with 31% of students in their final year of pharmacy school. A majority of students used 1-3 mobile Apps for finding DI irrespective of their year in school or gender, and free Apps available through their institutional subscription. Students identified purchased DI Apps as being more accurate, comprehensive, and up to date than the free Apps. **Implications:** Students' perception regarding the quality of these Apps may drive the purchasing preference of mobile Apps by each institution, while the accuracy of the Apps is unknown.

Preferred Database Use by Librarians and Drug Information Specialists and their Demographic Information. Melissa L. Hunter, *University of Wyoming*, Rebecca Hoover, *Idaho State University*, Kem P. Krueger, *University of Wyoming*. **Objectives:** Characterize the use of commercial and publicly available drug information databases and describe the demographics of librarians and drug information specialists (DIS). **Method:** A 32-item survey capturing database use, job duties, DI/library service characteristics and staff demographics

was administered to DIS, librarians, and pharmacy deans. The AACP membership database was used to identify librarians and faculty associated with the Library and Information Science Section (LIS), Deans of Colleges/Schools of Pharmacy and others who may be appropriate for the survey. **Results:** The four commercial databases most frequently used at least weekly by those with access are LexiComp® Online (78%); AccessPharmacy® (77%), Micromedex® (77%) and Facts and Comparisons® eAnswers (74%). The three public databases most commonly used at least weekly are Medline (96%), National Guideline Clearing House (58%), and Drugs@FDA (55%). Half of the respondents were under 40 years of age, with an average of 12 years in academia and 10 years in drug information. Respondents reported an average 15 years in pharmacy and 17 years in library science. On average, respondents spend 33% of their time teaching, 26% in service, 9% in research and 18% in administration. The most common departmental affiliations were pharmacy practice (49%) and health science liaisons (29%). 52% of respondents reported formal DI training (residency/fellowship). **Implications:** This study identifies librarians' and DIS' preferred databases for drug information. This data can be used to justify subscriptions to specific databases. The demographic characteristics of current and potential members of the LIS can provide support for job descriptions.

Relationship between Integrated Pharmacotherapy (IP) and Non-IP Cumulative Course Scores and Success on Drug Information (DI) Exams. Miki Goldwire, *Regis University*, Robert Haight, *Regis University*, Marianne McCollum, *Regis University*. **Objectives:** To determine the relationship between IP and non-IP course scores at the end of the P1-year and DI practical exam scores at the beginning of the P2-year. **Method:** Integrated Literature Evaluation-I (ILE) is a second-year course covering the systematic approach to answering DI questions; course material is delivered using team-based learning. Two multiple choice (MC) DI exams (exam1 and exam2) are administered in two parts. Part-1 is applied (searching drug databases for answers to DI questions, 10-MC) and part-2 is knowledge comprehension (20-30 MC). Students complete both parts on-line in any order in a 110-minute session. Descriptive statistics characterized student demographics and scores. Correlation statistics and linear regression analysis determined association associations between test scores and IP and non-IP cumulative course scores at end of P1 year. Three-years of data were analyzed. **Results:** From 2013-2015, students ($n = 211$) who completed ILE-I had an average age of 29+6 years with 39% female. IP-average correlated strongly with non IP-average ($r = 0.726$, $p = 0.000$). A weak correlation existed between DIexam scores and IP-average (exam1: $r = 0.416$, $p = 0.000$; exam2: $r = 0.399$, $p = 0.000$) and nonIP-average (exam1: $r = 0.514$, $p = 0.000$; exam2: $r = 0.375$, $p = 0.000$). A stronger correlation existed between IP-average and DIexam-part2 (exam1: $r = 0.367$, $p = 0.000$; exam2: $r = 0.410$, $p = 0.000$) versus part1 (exam1: $r = 0.258$, $p = 0.000$; exam 2: $r = 0.168$, $p = 0.015$). Compared to IP-average, nonIP-average correlated with better performance on DIexam1-part1 ($r = 0.397$, $p = 0.000$), but not exam2-part1 ($r = 0.11$, $p = 0.13$). **Implications:** Students who have a higher course average in either IP or nonIP classes at the end of their P1-year perform better on DI exams; compared to non-IP course average, a higher IP course average correlates with better exam scores when searching drug databases. Students prepare equally well for IP and non-IP courses.

The Growth of Food-Diet-Nutrition Literature in PubMed. Xiaomei Gu, *The University of Iowa*, Janna Lawrence, *University of Iowa Hardin Library for the Health Sciences*, Eric Rumsey, *University of Iowa Hardin Library for the Health Sciences*. **Objectives:** Since

its launching in 1966, the number of citations added in PubMed grows larger each year. In this study, we will compare the growth trend of citations for food-diet-nutrition (FDN) subjects to that of citations for all other subjects. **Method:** We conducted title word searches in PubMed on specific terms related to FDN subjects (e.g. soft drink) and other subjects (e.g. heart). Results were limited to human subjects. No other limits were applied. We used Google Charts within Google Spreadsheet to visualize the contrast between the growth of citations on a specific term and the growth of all citations in PubMed. **Results:** We found that the growth of citations on many subjects shares a similar steady growth pattern with that of all citations. FDN subjects, however, are exceptions. The numbers of articles on FDN subjects remained steadily low up until about 1990, after which a sharp growth followed. **Implications:** The inconsistent nature of indexing of FDN subjects in PubMed makes them intrinsically difficult to search. Added to that, as with any subject, the specific terms used to index a subject sometimes change. When doing a retrospective search for FDN subjects seems to show that there is a much greater volume of articles since 1990, it may be because the indexing practice for the subject being searched has changed. However, it may also mean that there were substantially fewer articles being written before 1990.

The Most Important Plant-Based Food Families in PubMed. Xiaomei Gu, *The University of Iowa*, Eric Rumsey, *University of Iowa Hardin Library for the Health Sciences*, Janna Lawrence, *University of Iowa Hardin Library for the Health Sciences*. **Objectives:** To explore PubMed's treatment of plant-based foods (PBFs) and to identify which plant families have the most food-related articles in PubMed. **Method:** Searches performed in the Spring of 2015 made use of PubMed's Medical Subject Heading (MeSH) hierarchy. Because the MeSH terms for plants are found grouped in the Plants explosion and are not part of the Food explosion, we designed these searches using a combination of the Plants explosion and a hedge we developed to look for topics related to food, diet, and nutrition: (food and beverages[majr]) OR (Nutritional Physiological Phenomena [majr]) OR (nutrition disorders[majr]) OR (food industry[majr]). **Results:** The top three families are beans, grains and potatoes-tomatoes. The number of citations goes from 6747 articles (Fabaceae) to 85 articles (Clusiaceae). **Implications:** Searching for plant-based foods (PBFs) in PubMed is tricky because most of these MeSH terms are indexed in the Plants explosion, and not in the Food explosion. (In fact, with the changes to the MeSH vocabulary in January 2016, all of these plant-based foods were located in the Plants explosion, and not with Food.) As a result, we decided to combine a Food-Diet-Nutrition hedge with the Plants explosion. PBFs being indexed in the Plants explosion has an advantage, since they are classified by plant family, putting taxonomically related plants together. Being able to search by family in PubMed is valuable because plant families have biochemical distinctiveness, which affects their nutrition.

Use of Adaptive Learning to Review and Remediate Incoming Pharmacy Students' Information Literacy Skills. Natalia L. Malesa, *University of Texas at Austin*, Ken Tothoro, *University of Texas at Austin*, Min Liu, *University of Texas at Austin*, Patrick J. Davis, *University of Texas at Austin*. **Objectives:** To evaluate whether or not an online adaptive learning platform is an effective tool for incoming pharmacy students to review and remediate information literacy (IL) skills. **Method:** Six learning outcomes from the Association of College and Research Libraries Information Literacy Standards for Science and Engineering/Technology were identified as foundational IL skills for incoming pharmacy students. Instructional and assessment modules were developed for each learning outcome within the

Desire2Learn® LeAP (LEARNING Path) adaptive learning platform. LeAP assesses students' IL skills and provides learning content personalized to each student's current skill level. In July 2015, incoming students were invited to take an IL skills pretest. Students could then complete modules as desired for review and remediation. A posttest was administered in August 2015. Results were analyzed using SPSS. **Results:** Fifty-one participants completed both the pretest and the posttest, and twenty-one participants completed at least one IL module. Participants who completed at least one module had higher posttest scores (Mdn=69.23) than pretest scores (Mdn=61.54); however, this increase was not significant ($Z=1.662, p=0.096, r=0.363$). Posttest scores were higher for participants who completed at least one module (Mdn=69.23) than for participants who did not complete any modules (Mdn=65.38). This increase was also not significant ($U=270.00, p=0.386, r=0.121$). Participants with higher average module scores demonstrated significantly higher posttest scores ($p=0.003$). **Implications:** Adaptive learning may be an effective tool for incoming pharmacy students to review and remediate IL skills. Completing IL modules is correlated with improved posttest performance. A follow-up study with a greater number of participants is recommended.

Use of Examssoft® Rubrics and Dual Peer Review to Improve a Drug Information Response. Gregory W. Smith, *The University of Louisiana at Monroe*, Gregory W. Smith, *The University of Louisiana at Monroe*, Scott A. Baggary, *The University of Louisiana at Monroe*, Adam Pate, *The University of Louisiana at Monroe*, Stephen H. Hill, *The University of Louisiana at Monroe*. **Objectives:** To determine the impact and benefit of incorporating a dual peer review process using Examssoft® rubrics for improving a DI response paper, with regard to medical-professional writing quality and DI content. **Method:** In a 1st year Drug Information (DI) Retrieval course, students reviewed two peers' written DI responses using an Examssoft® rubric identical to the faculty graders' rubric for the assignment. Post assignment, students were surveyed regarding their opinions of the dual peer review process, and their confidence in aspects of DI provision. Survey questions used a scale from Strongly Agree (10) to Strongly Disagree (1) and free text comment sections. Predicted grades from the peer review rubrics were compared to the final assignment grades using a t-test. All other survey data were analyzed and reported as means. **Results:** Overall, students strongly agreed that the assignment helped prepare them for future DI provision (8.4) and were confident in their ability to provide a professionally written DI response as 1st year students (8.5). Students expressed confidence in their ability to use primary (8.5), secondary (8.8) and tertiary (9.0) resources to answer DI questions. Overall, students strongly agreed that the rubric was well designed (8.9), that two peers were better than one (9.1), and moderately agreed that the peer feedback was helpful (6.9). Predicted grades from the dual peer review were significantly lower than final assignment grades from faculty graders (89.5 vs 92.3; $p=0.009$). **Implications:** Dual peer review using rubrics can positively impact the content and writing quality of DI responses.

Theoretical Models

Using Clinical Trial Randomization to Ensure Uniform Medication Error Coverage in EHR Medication Verification Activities. Shannon R. Tucker, *University of Maryland*, Amy Ives, *University of Maryland*, James A. Trovato, *University of Maryland*. **Objectives:** The objective of this project was to define a process to create and assign EHR patients that would (1) allow for the uniform coverage of 10 medication error types across three medication verification laboratories and (2) create a unique student-patient schedule that would limit

the impact shared patient information outside of the laboratory. **Method:** EHR usage for institutional medication verification laboratories necessitated the creation of individual patient records to allow student access and processing of patient medication orders. Ensuring coverage of 10 medication error types necessitated the creation of 4 medication error cohorts using random number generation. 4 template patients were created for each medication cohort containing 5 active medication order sets with a specified number of errors. A modified split-plot design was used to assign student-patient schedules minimizing overlapping assignment of template patients. **Results:** 152 unique patient assignment schedules were generated with 608 individual student-patient assignments. While each patient template was used for 30-40 students using this technique, the use of post-assignment naming limited identifiable patient duplication to <15 students. This ensured all students received exposure to all 10 medication error types. Student-Patient Assignments were distributed on barcoded activity rubrics used by facilitators to review student work during EHR laboratory sessions. **Implications:** This framework could be extended to allow assignment of patients based on laboratory schedule, medication, and/or blooms taxonomy to allow for randomization by scheduled laboratory time, uniform coverage of medications, and/or degree of difficulty.

PHARMACEUTICS

Completed Research

An Overview of the Pharmaceutical Sterile Laboratory at a Doctor of Pharmacy Program. Aladin A. Siddig, *University of Charleston*, Sarah Embrey, *University of Charleston, School of Pharmacy*, Jane H. Condee, *University of Charleston*. **Objectives:** The major goal was to provide well-integrated, detailed coverage of general principles of sterile compounding, and focusing on the USP 797 guidelines for sterile compounding in the Doctor of Pharmacy curriculum. **Method:** This Sterile compounding Laboratory is a one-credit hour core course that is open to second year PharmD students. The lab is structured into three main major sections. An initial basic laboratory section introduces the student to key foundational concepts of safety, hands-on experience with various types of compounding equipment, including needles, syringes, vials, ampules, minibags, intravenous pumps and tubing. The second section includes sterile compounding of hazardous drugs, high risk products, ophthalmics, intranasals, and nutrition products. A final section concludes USP 797 guidelines such as quality assurance, process validation, and environmental monitoring. **Results:** Laboratory assessment results, student evaluations, and informal verbal feedback from over 87 students in the fall 2014 guided refinements to this core-lab for the 64 students who took it during the fall of 2015. The mean course evaluation in both 2 years was 4.8 on a Likert scale anchored at Strongly Disagree (1) and Strongly Agree (5). In addition, the evaluation comments were positive, and some will be used to improve the structure of the course for the next time it is taught. Students demonstrated they mastered the material taught in both years, with 84.4-88.5% receiving an A in the course and 10.3-15.6% receiving a B. **Implications:** This Laboratory reflects significant trends and cutting-edge advances in pharmaceutical sterile compounding, including specific therapeutic agents and their applications.

An Analytical Approach to Assessing the Compounding Skills of Pharmacy Students. Deborah L. Elder, *The University of Georgia*, Joy Etuk, *The University of Georgia*, Kyana Morris, *The University of Georgia*, Ashley L Owen, *University of Georgia*. **Objectives:** To determine the effectiveness of UV spectrophotometry in analyzing the accuracy of non-sterile compounded products **Method:** Second

year pharmacy students were asked to compound 1 mg/mL aqueous solutions using 10mg salicylic acid (SA) tablets and SA powder, USP (99.8%). A 1.5mL sample of each solution was taken and stored at 4°C. Prior to diluting, samples were allowed to thaw at RT and a 0.25mL aliquot of each was transferred to a 25mL volumetric flask and brought to its final volume using distilled water. Using a 1mg/mL SA stock solution, a concentration curve (0.005, 0.0075, 0.01, 0.0125, 0.015 and 0.02mg/mL) was prepared. Prior to analysis (UV spectrophotometry @ 540nm), 8mL of each dilution was transferred to a glass test tube and allowed to react with 1 drop of ferric nitrate solution [ferric nitrate (4g), 1N HCL (12mL) and distilled water to 100mL]. A concentration curve was constructed and the line equation and R2 were determined using Excel®. Using the line equation, a percent accuracy was calculated for each compounded product. **Results:** The analysis determined, 19% of all samples were below 70%, 38% were between 70 to 89% and 33% were within the desired 90 to 110 % range (0.0095 to 0.011mg/mL) of accuracy; with approximately 10% above 110%. **Implications:** UV spectrophotometer is an effective method for determining the accuracy of compounded products. The simplicity, rapid results and low cost makes it a viable tool for assessing the compounding skills of students in large lab settings.

Assessing Student Perceptions of the PharmD Degree at a Private Tertiary Medical University in India. Kobi Nathan, *St. John Fisher College*, D. Chamundeeswari, *Sri Rama Chandra University*, Christine R. Birnie, *St. John Fisher College*. **Objectives:** Within the last ten years, pharmacy education in India has expanded to include the Doctorate of Pharmacy degree. With clinical practice in its early stages of development, job opportunities are limited. This study compares student's perceptions of the PharmD program before and after beginning their programs and their intent to pursue careers in India or abroad upon graduation. **Method:** A paper survey with a 5-point Likert Scale and open ended questions was distributed to students in each of the six years of the PharmD program at Sri Ramachandra University in Chennai, India. Additional job placement data regarding graduates was acquired from the university. **Results:** Survey results yielded an 80% response rate (n=144). Data revealed that 56.94% of students Strongly Agreed or Agreed (SA/A) that they understood the career options available to them before the start of the program. Additionally, 36.11% SA/A that their primary goal was to pursue careers in India, while 51.39% SA/A targeted careers abroad. Over 36% of respondents noted significant family influences in their decision to pursue the PharmD and 29.17% noted that the degree would better prepare them for further studies. Data collected by the school on PharmD graduates showed that 28.3% of the last three graduating classes have traveled abroad for further studies, while 62.26% have secured positions in India. **Implications:** While the job opportunities for PharmD graduates in India are limited, opportunities are expanding. Coinciding with the decreased number of job opportunities in the US, more graduates may pursue career opportunities in India.

Comparison of Perceived and Observed Knowledge of P1 Students Enrolled in an Integrated Laboratory Course. Nicole R. Winston, *Marshall University*, Brian Train, *Marshall University*. **Objectives:** The purpose of this study was to compare student perceptions of his/her skill set to their actual knowledge and to determine whether their perceived and/or actual knowledge improved upon completion of a simulated practice experience laboratory course. **Method:** First professional year (P1) students were asked to take a knowledge perception survey and a short assessment on the first day of lab and then retake the same assessment on the last day of lab. The survey instrument asked students to rate their confidence levels of their abilities on a four-point Likert

scale in four specific skill domains: communication, compounding, calculations, and documentation. Positive correlations between perceived and actual knowledge were compared using parametric methods (Pearson correlation), and significance was evaluated using two-tailed, dependent sample t-tests. **Results:** Correlations between perceived and actual knowledge were significantly correlated at baseline in the communication skills and calculations domains. After the lab had concluded, perceived and actual knowledge were significantly correlated in all domains ($p < 0.001$). Additionally, students' perceptions of their abilities significantly improved from an initial average of 2.6 to 3.3 ($p < 0.001$). Overall assessment scores significantly improved from an initial total percent correct average of 60 to 78 for the post-lab assessment ($p < 0.01$). **Implications:** Our P1 capstone was successful in matching students' perceived knowledge to actual knowledge at the completion of the course. Students' confidence in their abilities and acquisition of skills are essential for producing pharmacy students who may utilize these skills as interns at the conclusion of the P1 year.

Does Spacing Homework Improve Learning in a Team-based Learning Course? Adam M. Persky, *University of North Carolina at Chapel Hill*. **Objectives:** Students employ different practice schedules of homework over the course of a semester. Some students complete all of the problems at once (Massed Schedule) whereas other students complete a few problems at a time throughout the semester (Spaced Schedule). The objective of this study was to test which of these schedules produces superior retention of information within a team-based learning course **Method:** 142 second-year students in Foundations in Pharmacokinetics completed the study. Students completed homework problems throughout the first 9 weeks of the course. Each student completed half of the homework problems using OpenStaxTutor on a Massed Schedule and the other half on a Spaced Schedule. Performance was assessed at week 10 by a closed book, online 44 question assessment. **Results:** There was no significant difference between the spaced ($M = 81.5$, $SD = 1.8$) and mass conditions ($M = 80.8$, $SD = 1.8$) on the primary outcome of learning. **Implications:** Despite a large body of research supporting spaced practice promoting better retention than massed practice, we were unable to demonstrate this effect. Potential reasons for the lack of effect are: use of active learning as a predominant instructional method; short retention interval between homework and the assessment, overlapping content areas; additional study or practice prior to the assessment; and ecological consequences (ie, changing an individual can benefit others).

Effect of Repeated Testing of Math and Drug Recognition on Knowledge Retention in Pharmacy Students. Adeola O. Coker, *University of the Incarnate Word*, Kathleen A Lusk, David F. Maize, *University of the Incarnate Word*, Sushma Ramsinghani, *University of the Incarnate Word*, Regina Tabor, *University of the Incarnate Word*, Elizabeth A Yablonski, *University of the Incarnate Word*, Alejandra Zertuche, *University of the Incarnate Word*. **Objectives:** The purpose was to determine if repeated testing improved retention of mathematics problem-solving and drug recognition knowledge. **Method:** P2, P3, and P4 students participated. Students were divided into GPA subgroups and randomly assigned to control or study groups. Both groups had access to practice questions. Seven quizzes with post-quiz reviews were given to the study group over one year. No quizzes were given to the control group. A final exam and survey were given to both groups at the end. **Results:** Of 169 students that participated, 122 (72%) took the final exam and 78 (46%) completed the survey. Over 90% agreed or strongly agreed that repeated testing promoted long term knowledge, and that students should test themselves repeatedly. However, 63% either rarely or never tested themselves. Approximately

85% agreed or strongly agreed that the school should implement a repeated testing program and 40% felt that all students (P1-P4) should be tested. Students were divided into GPA groups (below 2.5, 2.5-2.9, 3.0-3.5, and 3.6-4.0) for statistical analysis (Two-Way ANOVA) to assess the benefits of repeated testing. The analysis suggested repeated testing did not have an effect on knowledge retention. However, when the P4 students were excluded from the analysis, a One-Way ANOVA showed significant ($p = 0.0283$) benefit of repeated testing for students in the 2.5-2.9 GPA range. **Implications:** Implementing a program of repeated testing did show benefit for at risk students. Overall, students believe repeated testing is beneficial, but few do it on their own.

Effect of Moisture on Thermal Properties of Monoglycerides for Triggerable Drug Delivery Systems. Hannah Stonewall, *Drake University*, Haley Kessinger, *Drake University*, Abebe E. Mengesha, *Drake University*. **Objectives:** Lipid matrices containing mixtures of glyceryl monooleate (GMO) and glyceryl monostearate (GMS) have been evaluated for magnetically induced thermo-responsive local drug delivery systems. The presence of excess moisture are reported to influence the behavior of monoglycerides and induce crystalline arrangement into a low melting polymorph. The aim of this study was to investigate the effect of moisture on the crystal behavior of GMO-GMS. **Method:** Samples containing GMO-GMS were stored at various relative humidity levels (0 – 100% RH), and the water uptake, melting points, relaxation temperature and heat of fusion were evaluated. The thermal properties and the surface morphology were evaluated using differential scanning calorimetry (DSC), X-ray diffraction and scanning electron microscopy (SEM). **Results:** Binary blend of GMO-GMS (50:50 wt%) stored at 97% and 100% RH levels at 25°C for 3 weeks increased in weight by 14.7 and 34.0% w/w, on dry basis, respectively. Despite such high moisture uptake, the matrices maintained crystalline structure as evaluated by DSC. The melting point (T_m) and heat of fusion were reduced from 70.0°C and 101.5 J/g for the dry samples to 64.4°C and 88.8 J/g for samples stored at 97% RH. However, the heat of fusion calculated based on dry monoglycerides weight remained constant at 102 J/g regardless of the level of moisture. The XRD and SEM data showed that the matrix maintained their crystalline structure at all RH levels. **Implications:** The GMO-GMS crystalline structure was not significantly affected by moisture, indicating the potential application of the matrix for thermoresponsive drug delivery system.

Enhancing Learner Acquisition of Pharmaceutical Science Curriculum Utilizing Gaming Strategies at a 3-Year Pharmacy Program. Adeleke Badejo, *Pacific University Oregon School of Pharmacy*, Ashim Malhotra, *Pacific University Oregon*. **Objectives:** 1) To enhance learner engagement in acquisition of pharmaceutical science content at a three year pharmacy program using interactive games like Jeopardy! 2) Augment learner recall of fundamental concepts and information retrieval, targeting “cognitive functions” in Bloom’s Taxonomy. **Method:** The Pacific University School of Pharmacy implements a three year curriculum where renal, immune, and cardiovascular pharmacology is taught in the P1 year. We implemented a gaming strategy to 1) capture learner interest, and enhance 2) participation and 3) recall by instructing sixteen groups of P1 students to prepare Jeopardy! question using poste lectures. Five selected groups were invited self-select a “leader” and provided pressure-sensitive buzzers. The remaining groups role-played “Alex Trebek”, asking questions in a serialized format. Student perception was surveyed to determine whether the activity was 1) helpful, 2) repeatable, 3) important for memorizing content, and, 4) analyzing

content for exam-emphasis. **Results:** We used Qualtrics to build and analyze data collected from our survey. Surprisingly, although 73% of the 57 respondents indicated that exercise was useful, 32% argued for conducting the activity outside of the class time. However, 77% suggested that the activity be repeated. Student showed improvement in performance when some of the game content was used for the final assessment. **Implications:** This study suggested modification of gaming strategies for use in the pharmaceutical science curriculum, with either a shorter intervention, or one that is implemented in fewer blocks.

Evaluation of Student Perceptions about the Use of Active Learning Tools in Pharmaceutical Compounding Laboratory. Vivek Gupta, *Keck Graduate Institute*, Rachita K. Sumbria, *Keck Graduate Institute*, George Bradford, *Keck Graduate Institute*, Jasmine Yu, *Keck Graduate Institute*. **Objectives:** To implement a flipped classroom model in pharmaceutical compounding lab course, and to evaluate student perceptions and performance in comparison to traditional teaching model. **Method:** Flipped classroom pedagogy was implemented by preparing videos for compounding procedures listed in the syllabus. Videos were made available to students for review at least 1 week before the lab sessions. Short pre-lab quizzes were administered to evaluate student engagement and awareness about lab objectives and procedures. At the end of the course, a student satisfaction survey was administered to evaluate student perceptions about meeting course objectives and expectations, ease of understanding and utility of active learning strategies in this course. Results of the survey administered using the 'flipped' approach were compared to those obtained using the traditional in-lab lecture-based approach during previous year. **Results:** Survey results showed that the flipped approach increased students understanding of the compounding concepts ($p < 0.05$), improved the clarity and ease of lab instruction ($p < 0.05$), better met student expectations ($p < 0.05$) and improved lab organization ($p < 0.05$). 89% of the students agreed that the pre-recorded videos enhanced student learning about compounding concepts. Overall, student perceptions about use of flipped approach in the pharmaceutical compounding lab were positive. **Implications:** Transitioning to active learning strategies was recognized to be very valuable in terms of enhancing student engagement and satisfaction. Lab session time could be used for more interactive learning and problem solving, while reinforcing basic pharmaceuticals concepts. This model can be easily adapted for other lab based courses in professional pharmacy curriculum like clinical skills, and sterile compounding.

Evaluation of Teaching and Assessment Methods in a Pharmacy Calculations Curriculum. Marie L. Davies, *Western University of Health Sciences*, Sarah Kim. **Objectives:** Pharmacy calculations is required in the didactic PharmD curriculum, however, many struggle with this course which encompasses not only mathematics, but application. The purpose of this study was to identify teaching and assessment methods that increase performance on a high stakes pharmacy calculations exam. **Method:** This study was IRB-approved through Western University of Health Sciences (WesternU). Eligible participants were P1 students at WesternU. Students participated in a 27-question survey regarding perceptions of pharmacy calculations teaching methods and predictors for success which was then linked to the students' performance on a calculations exam. A separate 8-question online survey was sent to other COPs regarding teaching methods in pharmacy calculations. **Results:** Many students agreed or strongly agreed that online lectures (82.5%), online practice quizzes (81.6%), and online video tutorials (75%) as beneficial means to mastering pharmacy calculations. There was no correlation to perceiving math as easy to higher performance. Students who

performed better preferred studying individually ($p = 0.017$). Other significant predictors for passing the exam were feeling confident prior to the course ($p = 0.016$) and feeling less anxious/more prepared with practice ($p = 0.002$). Most COPs teach pharmacy calculations in the P1 year (89.6%) and although 67.4% implement a high-stakes calculations exam the percentage to achieve a passing score widely varies. **Implications:** Students found online lectures to be effective to learning pharmacy calculations in a self-paced format. Perceived confidence in math skills alone did not predict success in pharmacy calculations, however feeling confident at the beginning of the course did predict higher rates of success.

Evaluation of Teaching Innovations within a Pharmacy Calculations Course. Connie M. Remsberg, *Washington State University*, Brenda S. Bray, *Washington State University*. **Objectives:** The objective of this study was to evaluate teaching innovations implemented within a pharmacy calculations course. **Method:** Two teaching innovations were implemented within a standalone pharmacy calculations course at Washington State University. In the first, students were given access to a self-directed, on-line summer course. At the beginning of the semester, students could take an optional challenge exam to "test out" of the fall course. In the second innovation, students enrolled in the fall course participated in an active learning classroom where class time was dedicated to application of knowledge. Student perceptions on these innovations were collected through anonymous questionnaires administered via Qualtrics. **Results:** Data for two cohorts of students was collected. During the first and second years of the summer course, 79% and 95% of students responding to the questionnaire reported completing at least one portion of the online course. Passing rates for the two cohorts on the challenge exam ranged between 34-36%. Students who passed the challenge exam reported a greater enjoyment working at their own pace in comparison to those who did not test out. Of students enrolled in the fall course, 78% reported they enjoyed the active learning classroom and 91% reported that active learning helped prepare them for weekly assessments. **Implications:** Extensive student participation in a self-directed course and corresponding student success on a challenge exam indicate self-directed study may be a useful tool for pharmacy calculations. Implementation on active learning classroom within pharmacy calculations appears to assist students in the preparation for assessments.

Formulation and Evaluation of a Fixed Dose Combination Capsule Containing Atenolol, Enalapril Maleate and Hydrochlorothiazide. Nickania A Pryce, *School of Pharmacy, College of Health Sciences, University of Technology, Jamaica*, Amusa S Adebayo, *Roosevelt University Chicago, Illinois, USA*, Deon A Bennett, *Faculty of Science and Sports, University of Technology, Jamaica*, Eugenie Brown-Myrie, *School of Pharmacy, College of Health Sciences, University of Technology, Jamaica*. **Objectives:** The purpose of the study was to design, formulate and evaluate an immediate release fixed dose combination (FDC) capsule containing atenolol (ATL), enalapril maleate (ENL) and hydrochlorothiazide (HCTZ) **Method:** Compatibility of solid physical mixtures of drugs and drug-excipient combinations was studied using differential scanning calorimetry. A 3-drug FDC was designed for capsule filling with 5 levels of disintegrant using dry granulation technique. Flow properties, capsule weight variation, disintegration and dissolution characteristics were evaluated using USP 29 methods. Reverse phase high-pressure liquid chromatography (RP-HPLC) method (isocratic) was developed for simultaneous analysis of the three drugs **Results:** Physical mixtures of ATL and ENL form a eutectic mixture at ratio composition 40:60 (% w/w) ATL/ENL. ATL and ENL were separately dry-granulated and mixed

in appropriate proportions before encapsulation with other ingredients. Compressibility index (8.53 ± 1.34 to $11.63 \pm 4.23E-09$) and Hausner's ratio (1.09 ± 0.16 to $1.132 \pm 0.00E+00$) indicate satisfactory flow properties of granules. Uniformity of weight showed variations less than 15%, RSD. Disintegration times were ≤ 2 minutes. The HPLC method was repeatable and produced satisfactory separation of the drugs. Time required for 25%, 50% and 80% of drug released was used to compare dissolution results. A One-way analysis of variance (ANOVA) was used to interpret results. No statistical significant differences were found among formulations. **Implications:** All formulations had T25%, T50%, T80% below 17 minutes indicating fast release rate indicating high bioavailability potential. Disintegration time was short. To ensure stability, ATL and ENL should be separately granulated before mixing with HCTZ for encapsulation.

Impact of Pharmaceutical Compounding Activity on Middle and High School Students' Perception and Interest in Pharmacy. Uyen Le, *Sullivan University*, Gopalakrishna Pillai, *Sullivan University*.

Objectives: The main objective of this study was to show the impact of pharmaceutical compounding activity on middle and high school students' understanding and interest in pharmacy career. **Method:** One-hour compounding activity was provided to middle and high school students who visited our school for their Health Career Camp programs. Students, supervised by faculty and/or PharmD students, were divided into groups of 2-3 students. They learned both theory and hands-on practice to compound two dosage forms, capsule and medicated lip balm. The same quiz was given to students immediately before and after the compounding while a survey was conducted at the end to obtain their evaluation on their activity. **Results:** A total of 96 students from different schools in Kentucky participated in the study. Most of them (>90%) were exposed to the compounding activity for the first time. Interestingly, almost all of them (>95%) had a good knowledge on capsule administration. Majority of them ($\geq 90\%$), however, struggled with the questions relating to specific compounding which were totally new to them. Subsequently, the compounding activity significantly helped them to improve this knowledge ($p < 0.01$). Regarding the survey, all of them admitted that the compounding activity was very interesting and meaningful, and that they would recommend it to other students as well. They all expressed a strong/enhanced interest in the pharmacy career through this activity.

Implications: Pharmaceutical compounding activity improved young students' perception and interest in pharmacy. Such an activity or a compounding camp would be beneficial in orienting prospective students to a pharmacy career.

Practically Speaking – Comparison of State Compounding Licensing Exam Requirements. Hoang Nguyen, *Touro College of Pharmacy*, Priyank Kumar, *Touro College of Pharmacy-New York*, Thomas J. Cook, *Touro College of Pharmacy-New York*.

Objectives: The objective of this project is to compare and contrast the differences that exist in state compounding exam licensure requirements. For each state that requires an additional compounding aptitude test, the exam licensure requirements, policies and procedures will be collected, organized and compared. **Method:** The board of pharmacy websites for the 50 states, Washington D.C., Puerto Rico, Guam, and Virgin Islands were accessed to obtain the most up-to-date information regarding exam requirements for pharmacist licensure. Jurisdictions requiring a compounding component were identified and their exam procedures and exam policies were compared and contrasted. **Results:** Out of the 50 states, Washington D.C. and U.S. territories, only three states – Georgia, New York, and North Dakota – currently require an additional compounding aptitude test as part of their licensure requirements.

The common areas of testing are: sections on patient profiles; errors and omissions; calculations; and extemporaneous compounding. Major differences in testing requirements and procedures include: identifying look-alike, sound-alike medications; an oral examination; hands-on compounding; and time allotted for the exams. **Implications:** Additional testing for knowledge and aptitude in extemporaneous compounding is very limited in the United States and territories with only three states requiring such testing. Differences in testing and emphasis may reflect a multitude of influences – e.g., historical precedence; practical administration procedures; specific needs for each state; etc. While standardization is not a goal, comparing policies and procedures can provide a basis for establishing best practices for evaluating the knowledge and aptitude of pharmacist candidates.

Quality Improvement Measures to Increase Licensing Exam Pass Rates.

Christine R. Birnie, *St. John Fisher College*, Anthony Corigliano, *St. John Fisher College*, Lipika Chablani, *St. John Fisher College*, Vivek S. Dave, *St. John Fisher College*, Alexander DeLucenay, *St. John Fisher College*, Deirdre P. Pierce, *St. John Fisher College*, Karl Williams, *St. John Fisher College*, Fang Zhao, *St. John Fisher College*. **Objectives:** The New York State Part III Exam is one of three pharmacy licensing exams required in the state of New York. This high stakes exam is a rigorous assessment of drug knowledge, clinical practice and hands-on compounding skills. The passing rates often deviate significantly from those of NAPLEX or MJPE. In response, our program implemented multiple interventions to better prepare students. The objective of this study is to assess the effectiveness of these quality improvement measures. **Method:** Over a five year period, targeted improvements were made to the curriculum, review course and faculty support for students planning to take the Part III Exam. A Part III committee was created to include both science and clinical faculty. A staff position was added to increase expertise in sterile compounding. The compounding curriculum was re-structured, and a focused review course was offered including a mock exam. To adjust for variation, pass rates were compared to the state average. **Results:** School pass rates for the NY Part III Exam continued to increase throughout the five year period. The pass rates for first time test takers for the 2010 June exam were 1% above the state average, increasing to 8% in 2011, 10% in 2012, 16% in 2013, 18% in 2014 and 18% in 2015. **Implications:** With continuous data driven quality improvement, increases in pass rates for licensing exams can be achieved. Similar efforts focused on NAPLEX and MJPE content have the potential to also improve pass rates in those exams.

Quality by Design (QbD) in the Classroom: Identifying Critical Quality Attributes for the Flipped Classroom.

Jessica M. Greene, *University of North Carolina at Chapel Hill*, Julia Khanova, *University of North Carolina*, Michael Jay, *UNC Eshelman School of Pharmacy*, Jacqueline E. McLaughlin, *University of North Carolina at Chapel Hill*. **Objectives:** Basic Pharmaceutics I and II was a two-semester course sequence in the Pharm.D. curriculum taught using a flipped classroom format from 2013 – 2015. The objective of this study was to identify core design elements of the flipped classroom that caused student dissatisfaction. **Method:** Voluntary, anonymous, electronic student feedback surveys, each containing one to three open-ended survey prompts, were administered during class at three time points each semester. Prompts asked students which aspects of the course were enjoyable and helpful and which aspects were not. All comments were aggregated, and a retrospective qualitative analysis was conducted to identify core design elements that negatively impacted the quality of the student course experience. Two investigators developed a codebook based on previous flipped classroom research

conducted in the same curriculum and independently thematically coded student responses. Comments indicating student satisfaction and comments about elements unrelated to course design were omitted from the analysis. **Results:** Student comments (N=1741) from eleven surveys were analyzed. The core design elements eliciting student dissatisfaction and student-perceived suboptimal course quality were length of video lectures, poor audiovisual quality and monotonous narration in videos, redundancy of pre-class content with in-class presentation, fast pace of active-learning exercises during class, and insufficient exam preparation tools such as practice problems. **Implications:** This study contributes to a growing body of literature describing the core design elements of the flipped classroom. Open-ended student feedback collected early in the semester can help course instructors identify sources of student dissatisfaction and address these concerns in specific courses.

Solubility and Stability of Concentrated Naloxone Hydrochloride Intravenous Infusion. Meredith L. Howard, *University of North Texas System*, Carolyn R. Honigford, *Butler University*, Sarah Nisly, *Butler University*, Hala Fadda, *Butler University*. **Objectives:** Naloxone, an opioid antagonist used in treatment of opioid overdose, can be administered by continuous infusion (4-8 µg/ml) for patients requiring frequent dosing. Higher concentrations of infusions would be beneficial in patients requiring high doses and on fluid restriction. Our objective is to determine if naloxone HCl is soluble and stable in IV infusions of NS or D5W at a concentration of 400 µg/mL. **Method:** Solubility of naloxone HCl in NS and D5W was determined at room temperature using the shake-flask method with UV-detection. Drug stability was determined using HPLC with a diode array detector. Stability of 400 µg/mL naloxone HCl solutions in NS or D5W was determined at 24 hours at room temperature while exposed to or protected from light. Stability was determined from the peak areas of naloxone HCl in the chromatogram. **Results:** The solubility of naloxone HCl in D5W and NS exceeded 100 mg/mL. No change in appearance of the solutions or presence of particulate matter was observed. No additional peaks were seen in the chromatograms. The changes, if any, in the peak areas of the naloxone HCl concentrated solutions were within the range we observed for the stability studies of 8 µg/ml standard infusions (0.4 to 3.3%). **Implications:** Naloxone HCl is highly soluble in NS and D5W; it is possible to prepare concentrated infusion solutions at 400 µg/mL. The results suggest that naloxone HCl solution is stable at this concentration in NS or D5W and light exposure does not impact the stability over 24 hours.

Stability of Alternative Acetaminophen Gummy Formulations for Pediatrics. Sarah Naltzley, *Sullivan University College of Pharmacy*, Abeer M. Al-Ghananeem, *Sullivan University*. **Objectives:** To determine the stability of medicated gummies containing acetaminophen (APAP) at room temperature and under stress conditions. **Method:** Gummy formulations containing gelatin, sugar, water, methylparaben, crospovidone (0%, 1%, and 2% PVP), and APAP were prepared at 80°C, with APAP addition at 1 hour. Total drug content and in vitro release of APAP from gummies was evaluated in artificial saliva. Drug analysis was performed using reversed-phase high-performance liquid chromatograph (HPLC) with UV detection at 250 nm. The stability of the gummies was evaluated over three months at room temperature and under stress conditions (40°C and 75% relative humidity). **Results:** Under stress conditions, all gummy formulations lost all structural integrity after only 1 month, while room temperature gummies maintained good structure. Despite the loss of structure under stress, the total drug content stayed consistent with 71.1, 71.8, and 72.0 mg/gummy at 0 months and 72.4, 74.3, and 70.4 mg/gummy at 1 month

for the 0%, 1%, and 2% PVP gummies, respectively. At 0 time, release profiles demonstrated the highest drug 2% PVP gummies had the highest APAP release (82.8%) after 70 minutes, followed by 1% and 0% PVP gummies, with 76.9% and 80.5% APAP released, respectively. Over time, the gummies with PVP stored at room temperature had increased APAP release, with 93.5% and 90.2% APAP release after 70 minutes, while 0% PVP gummies released 74.6% APAP. **Implications:** Gummy formulations are sensitive to stress conditions, and would have a short shelf life. However, stored properly in a cool dry place, gummies could be stable up to three months.

Student Perceptions and the Revision of a School of Pharmacy's Pre-matriculation Program. Erica L. Rowe, *South College*, Karen S. Mark, *South College*, Beverly S. Hamilton, *South College*, Eytan A. Klausner, *South College*. **Objectives:** To describe the student perception and revision of a pre-matriculation program in a school of pharmacy. **Method:** A 2-day pre-matriculation program, "Pharmacy Readiness & Enrichment Program" (PREP), was held the week before matriculation for the Classes of 2016 and 2017. The objectives of PREP were to facilitate student transition into the PharmD program and to review key concepts from students' prerequisite knowledge-base. The PREP program was extended and revised based on faculty input and student surveys to better prepare the students for the pharmacy program. This resulted in PREP for the Class of 2018 that was longer (2.5-days) and comprised additional sessions related to professionalism; time management; accessing, using, and citing resources; avoiding plagiarism; virtual tour of a fishbowl activity; and skills for case studies. A post-PREP survey was administered to the students from the Classes of 2016, 2017 and 2018. In addition, the Classes of 2017 and 2018 were surveyed regarding their perceived benefits of PREP during the P1 year. **Results:** Surveys for all of the classes showed that the majority of the students (> 90%, n=260) thought that the quality of PREP ranged from good to excellent. The quality of the individual sessions ranged from 77% to 98% of students rating them from good to excellent. **Implications:** Future changes in pharmacy education, such as those directed by the 2016 ACPE Standards, will likely lead to further evolution of PREP.

The Study of the Influence of Formulation and Process Variables on the properties of Simvastatin-Phospholipid Complex. Suprit Saoji, Veena Belgamwar, Sanket Dharashivkar, Aniket Rode, Connor Mack, Vivek S. Dave, *St. John Fisher College*. **Objectives:** The aim of the present study was to examine the influence of the formulation and process variables on the entrapment efficiency of simvastatin-phospholipid complex (SPC), prepared with a goal of improving the solubility and permeability of simvastatin. **Method:** The SPC was prepared using a solvent evaporation method. The influence of formulation and process variables on simvastatin entrapment was assessed using a central composite design. An additional SPC was prepared using the optimized variables from the developed quadratic model. This formulation was characterized for its physical-chemical properties. The functional attributes of the optimized SPC formulation were analyzed by apparent aqueous solubility analysis, in-vitro dissolution studies, dissolution efficiency analysis, and ex-vivo permeability studies. **Results:** The factors studied were found to significantly influence on the entrapment efficiency. The developed model was validated using the optimized levels of formulation and process variables. The physical-chemical characterization confirmed a formation of the complex. The optimized SPC demonstrated over 25-fold higher aqueous solubility of simvastatin, compared to that of pure simvastatin. The optimized SPC exhibited a significantly higher rate and extent of simvastatin dissolution (>98%), compared to that of

pure simvastatin (~16%). The calculated dissolution efficiency was also found to be significantly higher for the SPC (~54 %), compared to that of pure simvastatin (~8%). Finally, the optimized SPC exhibited a significantly higher simvastatin permeability (>78%), compared to that of pure simvastatin (~11%). **Implications:** The present study shows that simvastatin-phospholipid complex can be a promising strategy for improving the delivery of simvastatin, and similar drugs with low aqueous solubility.

Topical Reviews to Provide Integration of Pharmaceutical Sciences in the Pharmacy Practice Classroom. Ashim Malhotra, *Pacific University Oregon*, Melanie Foeppe, *Pacific University Oregon*, Danielle Backus, Marina Kawaguchi-Suzuki, *Pacific University Oregon*, Ryan Gibbard. **Objectives:** To explore mechanisms for integration and review of fundamental pharmacology in the pharmacy practice classroom. **Method:** The Pacific University School of Pharmacy (SOP) implements a three-year modified-block curriculum. Students take fundamental sciences in the P1, and pharmacy practice courses in the P2 years. We implemented this program at the start of select P2 courses, to allow P1 Pharmacology instructors to review content. For example, as students prepared for ambulatory care related to hypertension, P1 faculty reminded them of the core concepts of hypertensive disease from a pathophysiological, pharmacological, and pharmaceutical sciences perspective prior to the start the P2 course. Four interventions through the P2 Renal, Ambulatory Care, Cardiovascular, and Gastrointestinal Diseases blocks were carried out, spread out across the entire academic year. At the end of the P2 block, a student survey instrument assessed student perception on whether the activity was 1) useful as a review tool, 2) should be repeated for next class, 3) was a good use of their time, and, 4) should be repeated for other classes. **Results:** 55 students responded on average to the 4 voluntary surveys. Student opinions differed based on the subject matter covered, with Gastrointestinal Diseases getting the highest positive vote (81% agreed), while the Renal block got the lowest (75% agreed). None of the interventions scored more than 15% negative perception. **Implications:** Integration of fundamental sciences will help alleviate the dilution of the pharmaceutical sciences in pharmacy education and build a strong pathophysiological and pharmacological basis for therapeutic courses.

PHARMACY PRACTICE Completed Research

“Threading” – Weaving Mastery Learning and Achievement of Competencies into a Traditionally Graded Course Series. Dana P. Hammer, *University of Colorado*, Rachel A. Allen, *University of Washington*, Laura Hart, *University of Washington*, Karan Dawson, *University of Washington*. **Objectives:** Create a process whereby students in a skills-based course series must pass “threads” in addition to achieving overall passing grades, to pass courses in the 3-course series. **Method:** A P1 Introduction to Pharmacy Practice integrated course series uses a hybrid grading system of traditional and pass/redo scores to promote mastery learning. Series faculty identified that students could pass a course in the series by doing very well in one area, yet failing in another. To prevent this phenomenon and promote deeper learning, faculty categorized certain assignments, activities and exam/quiz questions into “threads” – Calculations, Communication Skills, Most Commonly Prescribed Medications, and Professionalism. The threads were identified as being most practice-relevant via input from series faculty, Community IPPE preceptors, and student Community IPPE performance. In addition to receiving an overall passing grade, students must now earn passing scores in each thread to pass courses

in the series. Students not passing a thread in any given course are given 2 opportunities to remediate before failing the course. **Results:** Findings from a 1-quarter pilot Fall 2015 showed 3/92 students did not pass 1 of the threads although all had passed the overall course. Each of these students successfully completed an individualized remediation early winter quarter to pass the course. **Implications:** While record-keeping and remediation took additional time compared to the previous grading scheme, series faculty felt the effort was worthwhile. This example can serve as a model for other traditionally-graded courses to help ensure a certain level of mastery and promote deeper learning.

A Comparison of Student Performance in a Self-Care Course after Implementation of Active Learning Strategies. Karl M. Hess, *Western University of Health Sciences*, Melissa Ross. **Objectives:** To compare: 1) exam and OSCE scores from the class of 2015 to the class of 2016 and 2) iRATs/tRATs and active learning assignment scores to exam and OSCE scores for the class of 2016, and 3) to assess student attitudes towards this revised self-care course. **Method:** Student performances on exams and OSCEs were compared from the class of 2015 to the class of 2016 using independent, 2-tailed t-tests. Scores from iRATs/tRATs and active learning assignments were compared to exams and OSCEs for the class of 2016 using the Pearson’s correlation coefficient. Student responses on anonymous formative assessments and course evaluations were used to assess student attitudes towards this course. **Results:** While there were no statistically significant increases in exam performance between the classes of 2015 and 2016, there was a statistically significant increase in performance on the second OSCE for the class of 2016 ($p < 0.05$). Success on the iRATs/tRATs also correlated with success on the final exam ($r = 0.096$, $p = 0.001$) for this class. Overall student opinion on the quality of this course significantly increased from the class of 2015 to the class of 2016 ($p < 0.05$). **Implications:** Active learning methods appear to add value to self-care education by improving student satisfaction with course material and by providing better preparation for skill assessments such as OSCEs. Summative exams therefore may need to better match active learning methods utilized in terms of formatting and assessment techniques in order to determine active learning’s true effect on student learning.

A Flipped Classroom Approach to Ambulatory Care Service Development. Teresa H. Truong, *The University of Oklahoma*, Katherine O’Neal, *The University of Oklahoma*. **Objectives:** To develop a course that focuses on (1) ambulatory care services available; (2) considerations in developing any ambulatory care service; and (3) deliver the course through a flipped classroom approach. **Method:** An elective course was designed with the purpose of providing students with an introductory, application-based course to ambulatory care. Students worked in groups for all course activities. Self-directed learning assignments were provided with guided learning objectives to be completed prior to each class. Groups prepared a presentation and summary handout of their specific topic to ‘teach’ the class. ‘Expert’ faculty panel facilitated further in-depth discussions. Finally, each group prepared an ambulatory care service plan highlighting a specific practice model. **Results:** Students ranked the course 4.1 out of 5.0 and provided self-reflection comments. They describe how the new approach was challenging yet aided in a deeper understanding of the content. The greatest area for improvement identified was more time devoted to faculty discussion. Average faculty rating of student engagement/preparedness, their enjoyment of the new format, and the likelihood of utilizing/recommending this flipped classroom approach in the future was 5.0, 4.8, and 4.4 out of 5.0, respectively.

Implications: A flipped classroom approach can be challenging for students due to its nontraditional format, however, it can also help students to learn the information more fully. The key factor to success with a flipped classroom approach seems to be the facilitated discussion that helps put learning materials into context for students.

A Model of Student Peer Review in a Medical Literature Evaluation Course. Lisa Charneski, *University of the Sciences*, Gary E. Sloskey, *University of the Sciences*. **Objectives:** To describe the employment, evaluation and improvement of a student peer review model in a medical literature evaluation course. **Method:** Research Design and Drug Information (RDDI) is a required second year pharmacy course. Students write an evidence-based drug information assignment contributing 15% to the overall course grade. A large class (~ 185) is a barrier for individualized formative feedback during the writing process. Students were assigned to teams of 3 or 4 students responsible for providing formative peer review throughout the writing process. The final draft paper submission grade weighting and rubric remained unchanged from previous years. Full peer participation contributed 10% to the course grade. Student performance on eight rubric items and a student opinion survey were evaluated. **Results:** Students provided peer review for 2 to 3 other students utilizing Blackboard® discussion board. Median total rubric scores did not change from the previous year (11/15 points) however statistically significant improvements were observed in various rubric components. Survey results indicated that 42.5% of students felt that the process had a “positive effect on the quality of their final paper” citing limitations such as “additional training of peer reviewers” needed. **Implications:** Currently, peer review for this assignment is being used for the second year. Interdisciplinary workshops to improve peer review skills were added to course (collaborators: University’s Writing Center and Biomedical Writing Program). The process was also streamlined and points for “quality” were incorporated. The effects of these changes will be re-assessed at the end of year 2.

A Novel Instrument for Transparent Annual Goals Resulting in Impactful Annual Performance Reviews. Ronald C. Reed, *Husson University*. **Objectives:** Pharmacy Practice Faculty frequently have unclear expectations for job performance across a spectrum of activities (Brazeau GA, *AJPE* 2012; 76(6), Article 101 & 76 (10). Article 185. A well-designed, individualized, mutually-agreed upon Goals Form holds the promise of reduced Faculty stress, improved Faculty perception of their contribution. Objectives were to: 1. Devise and implement a detailed annual goals document for Practice Faculty (academic year start) as the basis for Performance Evaluation Review (PER); 2. Survey Faculty to determine their perception of the instrument’s utility. **Method:** A multi-page Annual Goals Form was developed, including six domains: ia-Teaching, ib-Teaching improvement, ii-Student Advising, iii-Service (to School/ University/Community), iv-Clinical Practice, v-Scholarship, vi-Personal Professional Development. Each item was divided into weighted, time-bound sub-goals (“to-do” list). % goal weighting was a hybrid of time plus perceived importance. % weight dedicated to all Goals in a Domain were individualized for each Faculty member across all Domains. Each annual plan required many meetings for revisions; when finalized, it was used as a working document for mid/annual PER. The Chair conducted a multi-item survey to determine if the Form: i-made Faculty expectations clear, ii-lessened perceived anxiety towards the PER. **Results:** Of 18 Faculty, 15 used the Form x2 years. The majority (14/15) found the Form to create transparency in work expectations, lessen anxiety for their annual PER, plus improve their perception of their contribution to the School. **Implications:** A heavily-detailed, individualized,

time-bound annual “Faculty Development-Graded-Weighted-Goals Plan,” Form clearly enunciates realistic work expectations and lessened Faculty PER anxiety.

A Case-based Team Examination to Assess Student Pharmacists’ Medication Safety Skills and Attitudes. Robert D. Beckett, *Manchester University*, Kierstan M. Hanson, *Manchester University College of Pharmacy*, Nathan Stuckey, Teresa DeLellis. **Objectives:** Assess a case-based, team examination to evaluate student pharmacists’ medication safety skills and attitudes. **Method:** Instructors in a required, P2 medication safety course developed one learning objective per 2-hour lecture that focused on an attitude or skill essential for practice. Performance was assessed in a 2-hour, station-based, team final examination reinforcing importance of teamwork in patient safety. Activities (n=6), developed to assess each submitted objective (n=12), varied in anticipated length from 5 to 15 minutes. Other learning objectives were assessed in regular quizzes. Student perceptions of the final examination and self-confidence in achieving objectives were assessed in surveys prior to and following the course using 5-point Likert scales (1 =strongly disagree, 5=strongly agree). **Results:** Final examination mean score was 93 +/- 5%. Means ranged from 89% to 96% for individual activities. Sixty-three students (85%) completed both surveys. Eighty-two and 81% percent of participants strongly agreed or agreed the team examination helped solidify medication safety skills and benefited their professional development, respectively. Self-confidence ratings improved from pre- to post-survey for each objective (all p<0.001). Seventy-nine and 53% of participants strongly agreed or agreed examination scores accurately reflected self and team members’ course performance, respectively. Sixty-five percent of participants strongly agreed or agreed all members contributed to team performance. Compared to a traditional exam, students identified the team examination as more engaging (78%), interesting (73%), meaningful (52%), open-ended (75%), and preferable (65%). **Implications:** Students identified benefits of the team examination for performance, professional development, and self-confidence, but some did not agree all team members contributed.

A Redesigned Practice-Readiness Grand Rounds Course: Continued Assessment of Pharmacy Students’ Performance and Attitudes. Nataliya Shinkazh, *Touro College of Pharmacy-New York*, Emmanuel Knight, *Touro College of Pharmacy*, Brandon Vachirasudlekha, *Touro College of Pharmacy-New York*, Maureen Sullivan, *Touro College of Pharmacy-New York*. **Objectives:** A well-received “practice-readiness” course that reinforces foundational therapeutic topics was enhanced with web-conferencing technology and adjusted to include only midterm and final examinations. The objective was to assess pharmacy student performance and attitudes towards a redesigned course as compared with its previous course-design. **Method:** Two class cohorts completed a survey at course completion that measured student perceptions of the course’s impact on practice-readiness. Cohort 1 was required to return to campus from advanced pharmacy practice experiences (APPEs) to attend 7 review-sessions with faculty, and complete high-stakes examinations at each session. Cohort 2 was required to participate in the review-sessions via live attendance or utilizing web-conferencing technology and complete a high-stakes midterm and final examination. Student performance and attitudes were compared using descriptive statistics and an institutional review board exemption was granted. **Results:** Survey response rates were 94.7% (n=89) and 97.8% (n=89), in cohorts 1 and 2, respectively. Compared to the 99% of cohort 1, 88% of cohort 2 strongly agreed or agreed that the course helped reinforce foundational therapeutic knowledge. Fifty-three percent of cohort 2 strongly agreed or agreed

that having two exams was better than having an exam for each individual session, and 83% felt that the use of web-conferencing technology was a positive feature. Final course grades were higher in cohort 1 (80.76% vs 75.30%). **Implications:** A “practice-readiness” course enhanced with web-conferencing technology continued to be well received. Reintegrating examinations at each session and supplementation with web-conferencing technology for students with excused absences may be beneficial in improving course performance.

A Survey Assessing the Educational Needs of Undergraduate Students Regarding Human Papillomavirus. Jeanie M. Smith, *Harding University*, Rayanne A. Story, *Harding University*, Jessica Gall, Bailey Halford. **Objectives:** Despite the availability of human papillomavirus (HPV) vaccines, the incidence of cervical cancer in Arkansas has been historically at or above the national average. Due to these incidence rates in a medically underserved state, a group of research students at Harding University College of Pharmacy conducted a survey designed to assess HPV knowledge of undergraduate students. **Method:** Student pharmacists, under faculty supervision, designed a survey to identify the general knowledge base and perceptions about HPV-related disease and vaccination. The survey consisted of sixteen questions regarding demographics, HPV facts, related diseases, vaccination awareness, and willingness to receive the vaccine. After IRB approval was granted, surveys were administered to undergraduate students in public and private universities throughout Arkansas. **Results:** Students in public universities were more knowledgeable about HPV infections than students in the private sector. While 47% of students attending public schools have received the HPV vaccine, only 18% of students at private schools have received it. Almost twice the number of students in public universities would be willing to receive the HPV vaccine compared to students in private schools. **Implications:** Undergraduate students at public and private universities in Arkansas vary in their knowledge of HPV-related disease and vaccination. Targeted education about HPV can be developed for undergraduate students based on survey results.

Academic Performance among PharmD Students in a Patient Assessment Course Sequence Utilizing a Blended-learning Model. William A. Prescott, *University at Buffalo, The State University of New York*, Gina M. Prescott, *University at Buffalo, The State University of New York*, Fred Doloresco, *University at Buffalo, The State University of New York*, Nicole Paolini-Albanese, *University at Buffalo, The State University of New York*, Ashley Woodruff, *University at Buffalo, The State University of New York*. **Objectives:** To assess academic performance among PharmD students enrolled in a patient assessment course sequence utilizing a blended-learning model. **Method:** A blended-learning model consisting of a “flipped-classroom” was integrated into our school’s patient assessment sequence (PA1 and PA2) during the 2014-15 academic year. Students were educated using online videos prior to class, paired with team- and case-based learning in the classroom. Students enrolled in the “traditional-classroom” model during the 2013-14 academic year (control) and the blended-learning model during the 2014-15 academic year (intervention) were eligible for inclusion. Academic performance was compared between the groups: letter grades were compared using an R-by-C contingency table analysis and numerical grades were compared using a paired/unpaired *t*-test. **Results:** The intervention group of PA1 (n=130) and PA2 (n=131) attained a higher final numeric course grade than the control group of PA1 (n=126) and PA2 (n=122): PA1- 92.24+3.14 vs. 89.97+4.33 ($p<0.0001$); and, PA2- 90.33+4.86 vs. 85.81+4.21 ($p<0.0001$). The overall letter grade distribution for PA1 and PA2 was better in the intervention

group ($p<0.0001$), and a higher percentage of students in the intervention group earned a grade of “A” or “A-minus”: PA1- 79.23% vs. 65.08% ($p<0.05$); and, PA2- 64.12% vs. 18.85% ($p<0.0001$). The intervention group performed better on the final examination in each course (rigor was similar per item analyses): PA1- 80.49+9.63 vs. 73.01+11.99 ($p<0.0001$); and, PA2- 80.62+14.31 vs. 74.51+12.10 ($p<0.0001$). **Implications:** The blended-learning model improved academic performance among enrolled students. Schools across the Academy should integrate active learning strategies, similar to what is described here, into their curricula.

Acute Care Faculty Job-Sharing: Student and Faculty Perceptions. Alex N. Isaacs, *Purdue University*, Monica L. Miller, *Purdue University*. **Objectives:** The purpose of this research was to implement and assess the impact of a job-sharing model for two full-time acute care clinical faculty members. **Method:** Faculty at the site have historically been expected to round with one medicine team daily and precept 16 advanced pharmacy practice experience (APPE) students annually. The new job-sharing model enabled protected academic and clinical time. Four academic months were integrated without compromising clinical and precepting requirements. Academic months enabled time for the development and delivery of didactic teaching, research development, and manuscript writing. During clinical months, one faculty member was responsible for two medicine teams while precepting four APPE students and didactic teaching was minimized. To evaluate the impact of this model on APPE students, a 15-item questionnaire was administered to all APPE students who had completed an acute care rotation. Results were compared between students who completed an APPE with a job-sharing faculty member against a control group. Additionally, faculty job satisfaction was qualitatively assessed. **Results:** Sixty-seven students completed an acute care APPE, 23 with the new job-sharing model. Student survey response rate was 75%. Responses to orientation, contact time, supervision, and preceptor availability were similar between groups. Students precepted by job-sharing faculty reported positive perceptions of this model. Faculty reported an increased overall job satisfaction and enhance ability to balance clinical and academic responsibilities with this model. **Implications:** Based on student feedback, this acute care faculty job-share enabled concentrated time for completion of academic and clinical responsibilities, while maintaining high quality clinical experiences.

Adopting Transitions of Care within the Doctor of Pharmacy Curriculum. Sara M Eltaki, *Nova Southeastern University*, Devada Singh-Franco, *Nova Southeastern University*, Heather Jarvis, *Nova Southeastern University*, David J Leon, *Nova Southeastern University*, My-Oanh Nguyen, *Nova Southeastern University*, Marlene Calix, *Nova Southeastern University*, William Wolowich, *Nova Southeastern University*. **Objectives:** Transitions of Care (ToC) is the movement of patients between levels of care, providers and/or health care settings. This paradigm shift from siloed care (i.e., inpatient versus outpatient) to coordinated continuum of care is highly-recommended to reduce readmissions. Therefore, the objective is to determine how schools of pharmacy (SOP) define ToC and prepare students to develop skills essential for the provision of ToC services. **Method:** A 15-question survey was electronically disseminated to 136 SOP Pharmacy Practice chairs. Results were downloaded to SPSS; univariate and multivariate analyses were conducted. **Results:** Response rate was 26.5% (N=36). Seventeen SOP have ToC faculty located predominantly within the South (41.2%), West (29.4%) and Northeast (23.5%) US regions; only one SOP in the Midwest had a ToC faculty. A significant association between not having a ToC faculty and implementation of ToC practice

within a clinical site ($p=0.045$) and in the pharmacy curriculum ($p=0.003$) was observed. The average curriculum hours dedicated to teaching ToC was 7.29 (CI 4.27-10.31); four SOP did not provide medication reconciliation education to their students. Frequently-reported responsibilities of a ToC faculty at a site were providing patient education, medication reconciliation, and optimization of medication regimen (91.7%); the least-stated responsibility was obtaining discharge medications (63.9%). **Implications:** Medication reconciliation is a significant responsibility of a ToC faculty at their clinical site; however that faculty may not be effectively utilized within the pharmacy curriculum. Employment of ToC faculty should be considered in regions of high readmission rates. Low response rate was a limitation, although multiple survey reminders were sent.

Agreement between CKD-EPI and Cockcroft-Gault Equations for Determining Drug Doses in a Hospitalized Population. Heather A Nyman, *University of Utah College of Pharmacy*, Tianze Jiao, Kalani Raphael, Chai Low, Tom Greene, Daniel M. Witt, *The University of Utah*, Joanne LaFleur. **Objectives:** To determine medications for which use of CKD-EPI and Cockcroft-Gault (CG) kidney function estimating equations commonly result in different drug doses in a hospitalized population. **Method:** Demographic, medication, and laboratory information with Veterans with a 24+-hour hospital admissions in 2008-2012 were collected. GFRs were estimated using CKD-EPI and CG with actual (CG-act), adjusted (CG-adj) and ideal body weight (CG-id). The percentage of time that the equations resulted in different drug doses was determined for twenty three of the commonly prescribed renally-eliminated medications in the patient population. **Results:** Of the 6879 patients analyzed, 95% were male, 36% were >70 years, 12% were Black, and 63% were overweight/obese. For CG-id versus CKD-EPI, in 5 of the 23 medications, the equations resulted in a different drug dose in more than 20% of the participants. These medications included levetiracetam, sotalol, dofetilide, gentamicin, and venlafaxine. For CKD-EPI versus both CG-act and CG-adj, only for levetiracetam did more than 20% of participants have different drug doses. **Implications:** Use of CG-id results in more disagreement with CKD-EPI based drug dosing than use of CG-act and CG-adj. This may have important implications for drug dosing among male veterans.

An Interactive Approach to Enhance Student Knowledge through a Comprehensive Oncology Case Simulation. Erini S. Serag-Bolos, *University of South Florida*, Radha Patel, *University of South Florida*, Melissa Chudow, *University of South Florida College of Pharmacy*, Janelle Perkins, *University of South Florida*. **Objectives:** The American Colleges of Pharmaceutical Education (ACPE) emphasizes active learning for knowledge application and therapeutic decision-making. This comprehensive oncology simulation culminated the module through a case involving chemotherapy order set preparation, patient counseling, and aseptic technique. **Method:** Third year pharmacy (P3) students were divided into twenty groups consisting of five students and rotated through three stations. The first station involved completion of a patient-specific order set for an ovarian cancer chemotherapy regimen. The second entailed a counseling session with a standardized patient (SP). The last station encompassed order verification and review of aseptic technique. Students completed a pre- and post-simulation assessment regarding their knowledge of ovarian cancer treatment and aseptic technique as well as perceptions of pharmacists' roles in oncology and chemotherapy preparation. **Results:** A total of 109 and 110 students completed the pre- and post-simulation assessment, respectively. Average assessment scores increased from 74.2% to 88% after the simulation. Increased knowledge

was demonstrated on all six questions except the one asking whether jewelry should be removed before making aseptic preparations. Furthermore, students' perceptions regarding pharmacist roles and confidence in their own abilities to prepare a patient specific regimen increased on a five point Likert scale from 3.85 and 3.17 to 4.47 and 4.22, respectively. Feedback revealed students appreciated the opportunity to encounter an entire oncology pharmacotherapy process. Constructive feedback suggested that smaller group size may have afforded more hands-on time to practice aseptic technique. **Implications:** The oncology simulation allowed for a unique student opportunity to assume the pharmacist's role in the oncology setting.

An Interprofessional Approach to Teaching Advanced Cardiac Life Support to Pharmacy and Nursing Students. Zachary N. Jenkins, *Cedarville University*, Amy J Voris, *Cedarville University*, Mark Pinkerton, *Cedarville University*, Connie Ford, *Cedarville University*, Douglas Anderson, *Cedarville University*, Carolyn Barnett, *Cedarville University*, Karen Callan, *Cedarville University*, Stephanie Cailor. **Objectives:** To evaluate the effects of interprofessional Advanced Cardiac Life Support (ACLS) training on pharmacy and nursing students' knowledge and attitudes. **Method:** Third year professional pharmacy students and senior nursing students participated in an interprofessional ACLS training unit. This training unit familiarized students with the American Heart Association ACLS algorithms and skills used during a cardiac arrest in a hospital via lecture, demonstrations, and simulations using hospital-based scenarios followed by a period of debriefing. The simulations consisted of patient cases that highlighted the code contributions unique to pharmacists and nurses. A 9-item pre-survey was administered at the beginning of the seminar, and a 14-item post-survey was administered at the completion of the simulation. Wilcoxon signed-ranks tests were utilized to examine the differences between the pre- and post-surveys. **Results:** Students found that they had a better knowledge of the ACLS guidelines after the ACLS training unit ($p<0.001$). Both pharmacy and nursing students felt more comfortable working with the other healthcare professional students at the conclusion of the simulation ($p<0.001$; $p<0.001$). The students also had a better understanding of each healthcare provider's role in a cardiac life support scenario ($p<0.001$). **Implications:** An interprofessional ACLS training unit is an effective way to increase pharmacy and nursing students' knowledge of ACLS guidelines, as well as improving their attitudes towards working interprofessionally in a cardiac life support situation. Interprofessional ACLS training should continue to be incorporated into pharmacy and nursing school curriculum.

Application of Validated Instruments to Assess University-Wide Interprofessional Education Experiences. Kathleen A. Packard, *Creighton University*, Ann M. Ryan Haddad, *Creighton University*, Michael S. Monaghan, *Creighton University*, Joy Doll, Yongyue Qi. **Objectives:** Accreditation requirements mandate more interprofessional experiences for students. This mixed-methods study utilized the Team Skills Scale (TSS), the Student Perceptions of Interprofessional Clinical Education-Revised (SPICE-R) instrument, and reflection questions to assess university-wide interprofessional service learning experiences. **Method:** Survey data from the TSS and SPICE-R were compiled from 16 IPE service-learning activities involving 666 students from spring 2012-spring 2015. Multiple regression analysis applying generalized estimating equations (GEEs) was performed to assess for relationships between pre-and post-score change and interprofessional education (IPE) variables including year in curriculum, type of IPE event (one time versus longitudinal), and prior IPE experience. Reflection data were also captured, coded, and

analyzed for themes. **Results:** Significant improvements in scores after the IPE activities were detected for both instruments used (pre-TSS 66.4+0.4, post-TSS 72.7+0.4, $p<0.01$; pre-SPICE-R 44.7+0.2, post-SPICE-R 45.4+0.3, $p=0.01$). Significant improvements were observed at all curriculum stages only with the TSS and not the SPICE-R. Scores were greater and improved more for a longitudinal IPE course versus a one-time event with the SPICE-R, but not the TSS. Both instruments showed similar patterns of improvements regardless of prior IPE experience. Reflection data aligned well with the Core Competencies for Interprofessional Collaborative Practice. **Implications:** These results suggest utility for both the TSS and SPICE-R in conjunction with reflection questions, mirroring the 2015 Institute of Medicine (IOM) guidance. The SPICE-R may be more appropriate for longitudinal IPE experiences while the TSS may have broader applicability. These results provide insight for institutions strategizing for IPE assessment to meet accreditation standards.

Are Female Pharmacy Faculty from Venus and Males from Mars?

Eric Ip, *Touro University California*, Tristan Lindfelt, *Touro University California*, Annie L Tran, *Touro University California*, Amanda P Do, *Touro University California*, Mitchell Barnett, *Touro University California College of Pharmacy*. **Objectives:** To contrast the differences in demographics, career satisfaction, work-life balance, and stress levels between female and male United States pharmacy faculty. **Method:** In 2012, a 48-item online survey administered through Qualtrics was e-mailed to 4787 faculty who were current members of the American Association of Colleges of Pharmacy (AACP). Questions included demographic data, career satisfaction, work-life balance, stress levels, and lifestyle factors. Stress levels were measured using the validated Perceived Stress Scale (PSS). **Results:** A total of 802 respondents (57.0% females, 43.0% males) completed the survey. More females were in the 20-39 year age range, while more males were in the 60 years and older age range. Females were more likely to hold the rank of Assistant Professor (55.3 vs. 33.6%; $p<0.001$), while males were more likely to be Full Professors (34.2 vs. 11.0%; $p<0.001$). Females were over three times less likely than males to hold a department chair position (2.8 vs. 8.9%; $p<0.001$). Females were less likely than males to be extremely satisfied with their current academic position (11.9 vs. 21.6%; $p<0.001$) and work-life balance (3.2 vs. 11.8%; $p<0.001$). Females had higher PSS scores (14.7 vs. 11.8; $p<0.001$) and were less likely to plan to stay in academia the remainder of their careers (82.7 vs. 91.1%; $p<0.001$) than males. **Implications:** In order to retain female pharmacy faculty, programs may benefit from implementing strategies to enhance job satisfaction, work-life balance, and decrease stress levels.

Assessing Medication Adherence in College Students Using Asymptomatic Disease Simulation in a Pharmacy Calculations Course.

Elizabeth C Rogers, *South Carolina College of Pharmacy*, Jillian E Hayes, *South Carolina College of Pharmacy*, Travis Orr, *South Carolina College of Pharmacy*, Phillip Mohorn, *South Carolina College of Pharmacy*, P. Brandon Bookstaver, *South Carolina College of Pharmacy*. **Objectives:** The objectives of this study are to assess medication adherence and potential barriers among college students. **Method:** As part of a pharmacy calculations course, first professional year pharmacy students at the University of South Carolina were randomly assigned to once, twice or thrice daily dosing to simulate the management of an asymptomatic disease over an 84-day period. Students were provided 28-day supplies (placebo) and required to obtain in-class refills. Students were surveyed (Likert scale, 1-5 rating scale) at the beginning and conclusion of the semester to assess perception of adherence barriers. Study endpoints include

difference in predicted versus actual adherence; percent of students achieving an 80% adherence rate; and ranking of adherence barriers. **Results:** Of 222 students, the mean predicted adherence rate was 83.5%, compared to a mean midpoint and final adherence rates of 80.65% and 76%, respectively. The mean final adherence rates were similar among all three groups (77.5% = QD, 75.5% = BID, and 74% = TID, $p=NS$). Frequency of administration, duration of prescription, and treating an asymptomatic disease were rated the most important adherence barriers. Approximately 53% ($n=117$) of students achieved a final adherence rate of at least 80%. The majority of students (61.3%) strongly agreed that they were more likely to be adherent if symptoms improved. **Implications:** Nearly 50% of students did not achieve a final adherence rate of at least 80%. Perception of medication adherence and adherence barriers among college students should be taught early in the pharmacy school curriculum.

Assessing Student Perception of Using ExamSoft Platform for Test Taking in a Pharmacy Curriculum.

Sanjeeva A Goonasekera, *University of Cincinnati*, Courtney Hochman, *University of Cincinnati*, Shauna M. Buring, *University of Cincinnati*, Patricia R. Wigle, *University of Cincinnati*. **Objectives:** The main objective of this project was to evaluate student perceptions of ExamSoft, which was piloted in the Fall semester. **Method:** Five faculty members and 2 administrative assistants attended 3 educational sessions to orient them to, and answer questions regarding, ExamSoft. ExamSoft was implemented in their respective courses, which included assessments in 2 P1 courses and 3 P2 courses. All other classes continued to use traditional paper based methods for test taking. At the end of the semester, the students were invited to participate in a brief written survey which included questions about the impact of using ExamSoft on the student's stress level, individual student comfort level with technology, specific experiences incurred on the day of exam and input about their overall experience. **Results:** 165 students (87%) completed the survey. The majority (85% and 68% of the P1 and P2 students, respectively) responded they preferred exams using paper and pencil compared to ExamSoft. When asked if they would recommend continuing ExamSoft in the future, the majority of P1s answered "no" and the majority of P2s answered "yes, with reservations". **Implications:** Although our data seem to suggest that students prefer paper based exams over computer based ones, written responses to questions describing the "Overall Experience" suggest there is room for improvement in personnel training and exam administration. We extended our study for another semester with the same student population. We will resurvey them at the end of this semester to determine if continued exposure to ExamSoft changes their initial perception.

Assessing the Impact of an Interdepartmental Workshop on Student Perceptions of a Pharmaceutics Laboratory.

Daniel J. Hansen, *South Dakota State University*, Hemachand Tummala, *SDSU College of Pharmacy*, Wendy Jensen Bender, Brittney A. Meyer, *South Dakota State University*, Surachat Ngorsuraches, *South Dakota State University*. **Objectives:** Evaluate the impact an interdepartmental workshop on student perceptions of a pharmaceutics laboratory. **Method:** In Spring 2016, Pharmaceutical Sciences faculty collaborated with Pharmacy Practice faculty and a compounding pharmacist to facilitate a pharmaceutics workshop for first year pharmacy students. The workshop started with an introduction to the field of compounding pharmacy and the regulations surrounding manufacturing and sterility. Then, students worked through a case involving a pediatric patient and the need to develop an appropriate drug delivery system for fludrocortisone. Finally, the workshop ended with a short review of pharmaceutical calculations

and labeling requirements. A self-administered questionnaire survey with a 5-point Likert scale was developed to examine student perceptions of the pharmaceuticals laboratory before and after participating in the faculty led workshop. Paired-samples t-tests were used to analyze the perception data. **Results:** After integration, students showed significantly higher positive perceptions (p -values < 0.05) in their comfort level going into the pharmaceuticals laboratory (3.48 to 4.04) and in the compounding process (3.05 to 3.71). Their view of clinical application (4.36 to 4.61) and the need to use knowledge gained from other courses (3.71 to 4.26) in the pharmaceuticals laboratory, how they will utilize the skills developed as a practicing pharmacist (3.97 to 4.45), and their feelings towards the safety procedures involved in compounding (3.29 to 3.91), were also positively affected. **Implications:** The interdepartmental workshop positively impacted student perceptions of the pharmaceuticals laboratory.

Assessment of Pharmacy Student Didactic and Clinical Preparedness Surrounding LGBT and Mental Illness Patient Populations. Kevin A DeLeonardo, *Northeastern University*, Alyssa M Long, *Northeastern University*, Mark Douglass, *Northeastern University*.

Objectives: To conduct a knowledge and confidence assessment of pharmacy student practice readiness related to specific stigmatized patient populations. **Method:** An anonymous survey was administered to third (P3) and fourth (P4) professional year pharmacy students at Northeastern University. The survey assessed the breadth and depth of didactic education and clinical experiences involving lesbian, gay, bisexual, or transgender (LGBT) patients and patients diagnosed with mental illness. **Results:** The survey response rate among P3 and P4 cohorts was 41% (100/241). Both student cohorts demonstrated competence related to LGBT and mental illness stigma knowledge measures, with 94% and 95% of respondents correctly answering related questions, respectively. Regarding practice readiness, 51% and 62% of all students lacked confidence with treating patients who identify as LGBT and patients with mental illness, respectively. Students attributed their lack of confidence to inadequate curricular preparation pertaining to LGBT patients (71%) and mental illness patients (91%). **Implications:** Despite high performance on knowledge measures, P3 and P4 students expressed discomfort in treating patients identifying as LGBT and patients with mental illness. Students felt unprepared to effectively treat these stigmatized patient populations due to insufficient didactic and experiential learning opportunities. This data supports incorporation of more active learning into the Northeastern University pharmacy program.

Assessment of Pharmacy Students' Knowledge and Perception Before and After a Pharmacogenomics Simulation Activity. Radha Patel, *University of South Florida*, Erini S. Serag-Bolos, *University of South Florida*, Melissa Chudow, *University of South Florida College of Pharmacy*, Teresa Vo, *University of South Florida College of Pharmacy*.

Objectives: Compare student knowledge and perceptions regarding interpretation and communication of pharmacogenomic-guided treatment recommendations before and after a simulation. **Method:** Third year pharmacy students at the University of South Florida College of Pharmacy completed a pharmacogenomics simulation in the Pharmaceutical Skills V course. Objectives aligned with principles from the Translational Pharmacogenomics course, in which students were concurrently enrolled. The simulation involved a patient case review, interpretation of pharmacogenetic results, completion of a written SBAR focused on drug therapy recommendations from the pharmacogenetic results and counseling a standardized patient on those results. Students completed an online voluntary survey before

and after the simulation, which assessed demographics, knowledge and perceptions of the students' ability to interpret and communicate pharmacogenetic results. **Results:** A total of 109/111 (98.2%) and 104/111 (93.7%) students completed the pre- and post-simulation surveys, respectively. There was no significant difference in knowledge between the pre- and post-simulation surveys with recall-type questions. For instance, 94% and 99% answered the question regarding the CYP2C19 phenotype of a patient carrying two loss of function allele correctly in the pre- and post-simulation surveys, respectively ($p=0.63$). More students responded correctly to application-type questions after the simulation (74%) compared to before (44%), ($p=0.0001$). Responses for perception questions shifted towards strongly agree in the post-simulation survey ($p<0.05$). **Implications:** This activity gave students a unique opportunity to apply pharmacogenomics knowledge to a patient case in a simulated environment. Undoubtedly, curricular alignment and strategic integration of key concepts allows for deeper knowledge and application of materials.

Assessment of Pharmacy Students' Knowledge, Attitude and Perception of Personalized Medicine and Emerging Therapies Curricular Content. Alex Wei, *Northeastern University*, Mark Douglass, *Northeastern University*.

Objectives: The purpose of the study is to assess student knowledge, attitude and perception in regards to content surrounding personalized medicine and emerging therapies. **Method:** An anonymous survey was emailed to all P3 students at Northeastern University School of Pharmacy via Qualtrics. 14 questions regarding students' knowledge of pharmacogenomics, emerging therapies and related courses were included within the survey which utilized a 4-point Likert Scale, where 1 was not confident and 4 was very confident. **Results:** Among the 114 students surveyed, 102 (90%) participated in the online questionnaire; with 82 completing all 14 questions. Overall, students reported a lack of confidence with their knowledge of pharmacogenomics (1.67 out of 4). Of the 91 students that completed the question regarding the role of pharmacists, a majority ($n=87$, 96%) indicated that pharmacists serve an important role in pharmacogenomics and personalized medicine education. However, only 12 (13%) reported that curricular content of pharmacogenomics and personalized medicine topics was adequate. For questions related to emerging therapies, approximately one-third correctly answered assessment questions on the approved indication of PCSK9 (26/83; 31%) and PD-1 inhibitors (28/82; 34%), suggesting the curriculum's emerging therapy content is insufficient. If offered an elective course to fill these gaps, students indicated they were most interested in topics on specialty pharmacy, clinical scenarios involving emerging therapies, and genetic medicines. **Implications:** The results demonstrate clear deficiencies with students' knowledge and confidence of personalized medicine content. The study supports a pilot of an elective or certificate course on personalized medicine for pharmacy students.

Assessment of Student Perspectives on a Competition using Review Quizzes in Therapeutics Courses. Dylan M Barth, *Mercy Health*, Chris Bresler, Nicholas Messinger, *University of Cincinnati*, Bradley E. Hein, *University of Cincinnati*, Patricia R. Wigle, *University of Cincinnati*.

Objectives: Professors have utilized various strategies to reinforce classroom material. However, students' perceptions of these strategies have not been routinely measured. The primary objective of this study was to evaluate students' opinions on weekly review quizzes, which were voluntary and non-punitive. **Method:** Under the supervision of 2 faculty members, 2 students were charged with creating 30 review quizzes in 2 different therapeutics courses. Each student had completed the respective course during the previous year. Enrolled students were informed of the review quizzes and the

potential to participate in a team-based competition. In student-formed teams of 4-5, they competed in the first portion of the competition (weeks 1-10) which aligned with the National Football League and the second portion of the competition (weeks 11-15) which aligned with March Madness (single elimination). The survey contained fourteen items. Neither student had access to individual quiz scores. This project was approved by the University of Cincinnati Institutional Review Board. **Results:** There were response rates of 91.8% (90/98) and 69.4% (68/98) for the P2 and P3 students, respectively. Over ninety percent of survey respondents believed the quizzes should occur again and 87.4% thought the quizzes reinforced their learning. Fifty percent of students found that the competition portion of the project motivated them to complete the voluntary quizzes. **Implications:** Students perceived the weekly review quizzes were useful and should continue. However, the competition portion of the project received mixed reviews.

Assessment of Suicide Ideation Competencies in Health Professional Students Following a Blended Learning Communication Course. Cortney M. Mospan, *Wingate University*, Taylor Riedley, *East Tennessee State University*, Rick Hess, *East Tennessee State University*. **Objectives:** Study objectives were to determine the frequency of suicide ideation assessment during a final Objective Structured Clinical Evaluation (OSCE), compare frequencies across student disciplines (medicine, nursing, and pharmacy), and determine impact of facilitator discipline on student willingness to perform a suicide ideation assessment. **Method:** A retrospective review of recorded standardized patient depression OSCE cases was completed for 1st year health professional students (N=180) enrolled in a blended learning, interprofessional communications course. Students were assigned to small learning groups with representation from each discipline, facilitated by one faculty member. Assessment for suicide ideation was first taught online and practiced in small groups. Successful patient assessment was defined as inquiring about thoughts of harming him/herself at anytime during the final OSCE interview. Nonparametric tests were used to compare the frequencies across disciplines and logistic regression was used to compare whether faculty discipline influenced assessment performance. **Results:** Seventy-one medical, 32 nursing, and 77 pharmacy student OSCE interviews were reviewed. Cumulatively, 57.8% of students assessed for suicidal ideation. Across disciplines, a significance difference was noted as 74.6% of medical students, 53.1% of nursing students, and 44.2% of pharmacy students performed the assessment ($p=0.001$). No difference was noted between nursing and pharmacy students ($p=0.395$). Faculty discipline did not influence whether students performed the assessment ($p=0.177$). **Implications:** Medical students are significantly more likely to assess suicide ideation. Further research should be directed on identifying reasons for the differences across student health professions, and educational strategies should be developed to increase assessment rates.

Awareness of Pharmacy with Middle School Students in Science, Technology, Engineering, and Mathematics (STEM) Program. LaDonna M. Oelschlaeger, *Marshall B. Ketchum University College of Pharmacy*, Eva Y. Wong, *Marshall B. Ketchum University College of Pharmacy*, Rachele Lin, *Marshall B. Ketchum University College of Optometry*, Triseing Ortiz, *Marshall B. Ketchum University College of Pharmacy*, Jozef Stec, *Marshall B. Ketchum University*. **Objectives:** To engage students in activities involving mathematics and science skills and increase awareness of the pharmacy profession. **Method:** Marshall B. Ketchum University Colleges of Pharmacy and Optometry collaborated with the Science, Technology,

Engineering and Mathematics (STEM) program in the local community for an outreach program for middle school students. The program included a presentation and laboratory exercises to showcase pharmacists and optometrists as healthcare providers. Pre- and post-surveys were distributed to assess how interest toward mathematics and science correlate to awareness of the pharmacy profession. **Results:** Twenty-seven males, ages 11-14, participated. There was no significant difference between the number of students interested in mathematics and science, 85% (23/27) and 93% (25/27), respectively. However, there was no correlation between how individual students responded to whether they liked mathematics or science ($r^2=0.01$). There was a weak correlation between how familiar students were with pharmacy as a career choice and whether or not they had considered becoming a pharmacist ($r^2=0.24$). Interestingly, there was a negative correlation between the degree to which students liked science and whether or not they had considered pharmacy as a career ($r^2=0.27$). The data suggest that students interested in science are not attracted to pharmacy as a profession. Overall, 89% (24/27) agreed that the activities helped them understand the important role of pharmacists and 48% (13/27) were encouraged to learn more about the pharmacy profession. **Implications:** Pharmacy schools can impact awareness of the profession in early education with outreach programs for students interested in both mathematics and science.

Cartography 2.0 – Re-Mapping Skills Across the Curriculum. Deanna Tran, *University of Maryland*, Amy Ives, *University of Maryland*, Lisa Lebovitz, *University of Maryland*. **Objectives:** To horizontally and vertically integrate skills training and learning outcomes in a 6-course skills-based lab series. **Method:** Changes in course managers and curriculum over time led to course drift in the 6-course “Abilities Labs” series. Motivated by the issuance of ACPE Standards 2016, a day-long retreat was held with all lab course managers, P4 teaching elective students, the lab pharmacist, the Instructional Design fellow and Vice Chair of Education. Small groups reviewed Standards 2016, the school’s learning outcomes, and assessed key skills across the laboratory curriculum. Each skill was evaluated for possible gaps or duplication and potential improvement. From this discussion, a year-long implementation plan was developed. **Results:** The following key skills were mapped across the laboratory curriculum: Communication, Drug Information, Physical Assessment, Sterile product preparation, Community Dispensing, Pharmacy Law, SOAP notes, and Compounding. The retreat participants found that drug information content was fragmented throughout the curriculum, vital signs were assessed repetitively, communication skills were not covered, and physical assessment activities were limited. The following revisions were recommended and implemented: communication activities were developed for each lab course, drug information activities were revised to include specific resource utilization, physical assessment activities including vital signs were developed using simulation technology, duplicate vital signs assessments were either eliminated or revised to include a triage component and community dispensing and sterile product preparation now includes a verification station for students to practice checking technicians. **Implications:** We successfully revised laboratory skills across the curriculum by mapping activities to the 2016 standards and will continue with yearly retreats.

Change in Knowledge, Skills, and Attitudes Regarding Transitions of Care. Jenna Pakala, *North Dakota State University*, Jeanne E. Frenzel, *North Dakota State University*, Elizabeth T. Skoy, *North Dakota State University*, Heidi Eukel, *North Dakota State University*. **Objectives:** To assess the impact of a simulated patient care transitions activity on the confidence and knowledge of third year pharmacy

students. **Method:** Third year pharmacy students followed one patient through five simulated transitions of care in the following settings: hospital admission, inpatient rehabilitation, discharge to home, admission to skilled nursing facility, and home health care. With each transition, students evaluated their patient's profile for medication errors and completed common pharmacist duties in each setting. Students completed medication reconciliation, inpatient medication order entry, discharge education, long-term care consulting, and antibiotic monitoring. Before and after the activity, students were given an anonymous, voluntary survey to assess for changes in confidence, attitudes, and knowledge regarding patient care transitions. **Results:** Pre-post survey data was collected for 53 students who completed the activity. Students were asked to evaluate their confidence in several skills on an evaluation scale ranging from 1 (not confident) to 4 (very confident). Students demonstrated a significant gain in confidence in their ability to recognize high-risk medications ($p < 0.001$), obtain an accurate medication list ($p < 0.001$), accurately enter inpatient medication orders ($p < 0.001$), provide education to patients upon discharge ($p < 0.001$), and identify medication changes that occurred within the hospital stay ($p < 0.001$). In addition, a second set of survey questions administered in the post-survey indicated 92.3% (N=52) of students agreed or strongly agreed that the activity helped them develop skills needed in their future career. **Implications:** The simulated activity increased student knowledge and confidence in ability to perform pharmacist functions related to transitions of care.

Changing Pharmacy Students' Knowledge, Skills, and Attitudes about Medication Errors and Patient Safety. Jeanne E. Frenzel, *North Dakota State University*, Elizabeth T. Skoy, *North Dakota State University*, Heidi Eukel, *North Dakota State University*. **Objectives:** To design and evaluate the use of simulations to prepare students to reduce medication errors and promote patient safety. **Method:** Students investigated staged rooms using a cause and effect diagram or fact gathering worksheet to determine the cause of a medication error. Prior to and following the activity, students were invited to complete an anonymous survey using an online survey tool. **Results:** Students demonstrated significant changes in attitudes and level of comfort or skill regarding medication errors. They felt they could find the cause of an error ($p < 0.001$), identify factors leading to an error ($p < 0.001$), and work with a team to prevent error recurrence ($p < 0.001$). Students also demonstrated an increase in knowledge about errors ($p < 0.001$) and the root cause analysis process ($p < 0.001$). **Implications:** Students used root cause analysis methods to discover medication errors. Through this process students improved their knowledge, skills, and attitudes regarding medication errors.

Comparing First Year Pharmacy Students' Perceived and Actual Preferred Learning Method Using the VARK Questionnaire. Rabia Atayee, *University of California, San Diego*, Kelly C. Lee, *University of California, San Diego*, Mark J Lin, Candis M. Morello, *University of California, San Diego*, David S. Adler, *University of California, San Diego*, Katharina Brandhl, *UC San Diego Skaggs School of Pharmacy*. **Objectives:** In this study, we investigate whether students' perceived best learning method matches with the VARK, a validated 16-item questionnaire, to identify their preferred learning styles. **Method:** First year pharmacy students were asked to assess their perceived preferred learning style using the VARK questionnaire administered during orientation prior to classes commencing. Consensus between their best perceived learning style and VARK results were obtained. "Mismatch" occurred when learners' best perceived learning methods were different as their highest VARK result. Multiple learning methods identified by VARK were classified as multimodal. The

study was approved by UC San Diego IRB. **Results:** 62 out of 62 students (100%) completed both surveys; the majority were female (77%), of Asian race (56%), and had a mean age of 24 years (range 21-35). The majority of students had a mismatch (55%, n=34). Per VARK, 55% had multimodal learning preference with the most preferred learning being kinesthetic (35%, n=26), followed by aural (27%, n=20). Female students were more likely kinesthetic learners compared to males (mean female VARK = 6.30, male VARK = 4.57, ANOVA $p < 0.05$) and less likely to have aural as learning preference (chi-square, $p < 0.05$). No other differences were found with VARK in regards to race, education, and prior pharmacy experience. **Implications:** The majority of incoming pharmacy students did not correctly identify their best learning method and appropriate academic guidance may be necessary. Most students are multimodal learners and gender may play a role in learning preferences.

Comparison of Results of Course Evaluations Administered in a Pharmacotherapy Course. Andrew Traynor, *Concordia University Wisconsin*. **Objectives:** Compare pharmacotherapy course evaluation results when administered at different times in the semester. **Method:** The Chronic Kidney Disease (CKD) unit of Pharmacotherapy II is the first unit in the course and consists of five 90 minute lectures taught by one instructor. One week after administering the unit exam, students were invited to participate in an anonymous and optional end of unit (EoU) survey utilizing the university's standardized course evaluation questions. During the last week of the semester, students were invited to complete an anonymous and optional end of course (EoC) survey for all units and instructors. **Results:** Ninety-one students participated in the course with 52 completing the EoU and 45 completing the EoC survey. Thirty students completed both surveys and 25 students did not participate. Students completing the EoU survey, on average, scored 6.6% higher on the unit 1 exam ($p = 0.017$) than those not completing. A lower average rating was observed on the EoC vs. the EoU survey for two questions. Five questions had a 0-0.2 higher average on the EoC vs. the EoU survey. Eight questions had a > 0.2 higher average on the EoC vs. the EoU survey. Number of words for comments on the EoC survey were greater (2,293) than on the EoU survey (1,679). **Implications:** While participation in an anonymous, optional EoU survey was higher, average student ratings and number of comments on an EoC survey was higher. Faculty and administrators must consider the impact of the timing of teaching evaluations on feedback gathered, course assessment and faculty promotions.

Confidence and Competence of Immunization Delivery by Pharmacy Interns: An Immunization Training Perspective. Andrea Levin, *Nova Southeastern University*, Devada Singh-Franco, *Nova Southeastern University*, Jason A Gershman, *Nova Southeastern University*. **Objectives:** Most states allow pharmacy interns to provide immunizations under supervision of a pharmacist; however, not all states allow interns to immunize (non-immunizers). Pharmacy students in their final year of school were surveyed to determine if formalized immunization training was provided at their school and if this training impacted their perceived ability to determine patients' immunization needs and administration. An additional goal was to determine if non-immunizers perceived themselves to be at a competitive disadvantage compared to immunizers. **Method:** SurveyGizmo was used to create this anonymous and voluntary survey. Participating pharmacy school representatives throughout the US disseminated a survey link to their respective students. Confidence level was set at 95% with a one-sided chi-square test for independence. **Results:** Of 112 non-immunizers, 85 were required and 27 were not required to complete a formalized course. About 46% of those required to

complete the course felt their training in administering immunizations was sufficient, while 7.7% of those not required to complete the course felt they were sufficiently-trained ($p < 0.0004$). When pertaining to non-immunizers evaluating immunization needs based whether or not they received training or if a lack of formalized training put them at a competitive disadvantage were no different ($p > 0.05$). **Implications:** Presence or absence of a formalized training requirement did not impact non-immunizers' perceived ability to evaluate the need for immunizations or place them at a competitive disadvantage. However, formalized training significantly and positively impacted responders' perceived ability to administer immunizations. Therefore, formalized immunization courses within the pharmacy curriculum are necessary.

Creative Chaos to Critical Thinking: Evaluation of a Pharmacy Student's Ability to Critically Think. Catherine Behret, *MCPHS University*, Tulip Schneider, *MCPHS University*. **Objectives:** With expanding roles of pharmacists in patient care, the ability to critically think is essential when resolving problems that arise in the clinical setting. The objective of this study is to observe the effect of a novel teaching approach on the development of critical thinking skills in pharmacy students. **Method:** Thirty-one pharmacy students (PY3) were enrolled in an elective course on the deconstruction of critical thinking. Formative assessments included: hands-on activities, reflection essays, and a clinical debate. Summative assessments involved the clinical evaluation of a virtual patient program at weeks 4, 8, and 13 of the academic semester. The virtual patient program scored each successive attempt based on performance and documentation. We hypothesized that the course would impact students' critical thinking skills and improve their scores in the virtual patient cases. Grades for each activity were compared from baseline to end of semester for differences in performance. **Results:** The overall mean difference in the scores for the virtual patient was 25.182 ($p < 0.001$, $n = 28$) between weeks 4 and 8, and 29.387 ($p < 0.001$, $n = 31$) between weeks 4 and 13. Changes in the scores were analyzed within each clinical module between weeks 4 and 8. There was a statistical difference in the mean scores for several of the cases. For example, for the gastrointestinal case the mean difference was 28.150 ($p < 0.001$, $n = 11$). **Implications:** Observations and objective scores from the activities in the unique course displayed an increase in engagement and academic success.

Critical Care Education in US Colleges and Schools of Pharmacy. Trisha Branan, *The University of Georgia*, Ashley N. Castleberry, *University of Arkansas for Medical Sciences*, Michael J. Fulford, *The University of Georgia*, April M Quidley, *Vidant Medical Center*, Drayton A. Hammond, *University of Arkansas for Medical Sciences*. **Objectives:** To determine the nature and extent of critical care (CC) education in U.S. schools of pharmacy (SOP) **Method:** This was an IRB-approved, multicenter, survey research study of when and how 37 core CC topics were taught within pharmacy curricula. Survey links were emailed to curriculum AACP list-serve members through Qualtrics (Provo, UT) with instructions for recipients to complete or forward to individuals with close knowledge of this curricular area. Participants completed surveys in January-June 2015. Frequency and descriptive statistics characterized the specific CC topics and extent and methods of CC content delivery. **Results:** Respondents from 81 of 138 SOP (58.7%) completed the survey entirely. Respondents were mixed between private (52%) and public (48%) institutions with a median class size of 100 students (IQR 80-150) and 2 CC faculty members (IQR 1-3). Most programs incorporated CC education into the required didactic curriculum (77%). Topics most frequently taught in required didactic curricula were advanced/decompensated heart failure (88.7%) hypertensive crises, stress ulcer prophylaxis, and sepsis (all

83.9%). Most programs offered an elective in CC (57%). Reasons for not offering an elective included insufficient faculty time and expertise. Most CC content was delivered by lecture. Simulations were used less frequently and to a similar extent in the required and elective curricula. **Implications:** Frequently, foundational CC content essential to CC practice is not taught in SOPs. Many institutions incorporate active learning strategies into their curricula. The impact of these curricular choices on CC knowledge and pursuit of CC positions requires further evaluation.

Cultural Competency in a Medical Spanish for Pharmacists Course. Robert Mueller, *Concordia University Wisconsin*. **Objectives:** 1. Describe the impact of the course on students' perception of their ability to complete course objectives relating to cultural competency 2. Assess student performance on elements relating to cultural competency **Method:** Students enrolled in Medical Spanish for Pharmacists were invited to take a pre and post-course survey on their perceptions. Course elements relating to cultural competency were evaluated to assess student performance. **Results:** In the pre-course survey, 33.3% of students agreed or strongly agreed they could identify various cultural notes and themes relevant to the Spanish-speaking community, while 66.6% of students agreed or strongly agreed they could develop a sense of connection to the local Hispanic community. After course completion, these percentages increased to 85.7% and 100%, respectively. The average examination score on items related to cultural competency was 93.7%. **Implications:** A multi-faceted approach to cultural competency had a positive impact on students' perception and performance.

Current Status and Future Direction of Nuclear Pharmacy Education in US Schools/Colleges of Pharmacy. Simi Gunaseelan, *The University of Texas at Tyler*, Mohammed A. Islam, *West Coast University*, Rahmat M. Talukder, *The University of Texas at Tyler*. **Objectives:** The scope of nuclear pharmacy practice is widening with the increased use of radiopharmaceuticals in the diagnosis, treatment and prevention of serious diseases. The aim of this study is to determine the number of US pharmacy programs offering training in nuclear pharmacy education and assess its status in the curriculum. **Method:** An online assessment of the nuclear pharmacy education/training was conducted in December 2015-January 2016 by accessing the websites of US Pharmacy Schools/Colleges. Pertinent information was identified, retrieved and analyzed. **Results:** Out of 132 ACPE-accredited and candidate status US PharmD programs, only 28 programs offer 47 nuclear pharmacy didactic courses with 9 programs offering specialty track/certification programs. The course contents mainly offered as professional electives include introductory overview of radiation physics/biology, radioactivity detection/protection and radiopharmaceuticals. Two courses are dedicated to medical imaging. The mode of delivery of the didactic courses includes lecture ($n = 37$), lecture with lab ($n = 2$), online ($n = 8$) and field trips to local nuclear pharmacy ($n = 2$). Nineteen programs offering nuclear pharmacy as an elective APPE has been identified. **Implications:** Only 21% of US pharmacy programs offer didactic nuclear pharmacy courses whereas 14% offer nuclear pharmacy as an elective APPE. Opportunities exist to expand/introduce this specialized area across more pharmacy programs by offering didactic and APPE electives on nuclear pharmacy contents. Emphasis on experiential opportunities will have significant impact in broadening graduates' interests in this specialized field of practice.

Defining Milestones for Evidenced-Based Medicine Skill Progression: A Modified Delphi Study. Shannon L. Reidt, *University of Minnesota*, Marion K. Slack, *The University of Arizona*. **Objectives:** To define milestones in evidence-based (EBM) skill progression

among pharmacy learners to guide the development of Doctor of Pharmacy and residency curriculum. **Method:** Fourteen EBM experts participated in a two-round Delphi process to define milestones. Experts were presented with a rubric of milestones using Dreyfus model of skill acquisition stages of learning (novice, advanced beginner, competent, proficient, expert) as milestones. Descriptions of each milestone were developed for each of the five EBM skills: ask, acquire, appraise, apply, and assess (25 milestones). In round 1, experts were asked to rate their level of level of agreement (0-100%) with each skill's milestones and provide comments explaining disagreement. Milestones not reaching a prospectively set level of agreement (80%) were revised and in round 2, experts were asked to rate their level of agreement. **Results:** After the first round, experts reached consensus on all skills except acquire, which reached consensus in round two. The primary dimensions used to differentiate between the milestones were amount of coaching required by the learner and complexity of the scenario to which EBM skills would be applied. In general, the milestones progressed from simple scenarios requiring moderate coaching to complex scenarios where the learner works independently. **Implications:** The milestones may be used to design instruction and to develop assessments tailored to a learner's developmental stage. Scenarios to which skills are applied need to be simple, and coaching needs to be available for novice learners while a learner at the master level can work independently in a complex scenario.

Developing Student Pharmacist Empathy: The Impact of Patient Modeling in a T1DM Skills Lab Activity. Laurie W. Fleming, *The University of Mississippi*, Dylan Lindsay, Laura Johnson, Anne Marie Liles, *The University of Mississippi*, Joseph A. Dikun. **Objectives:** To determine the role of a patient modeling activity on student pharmacist perceived empathy during a T1DM skills lab **Method:** Students completed the 15-Question Kiersma-Chen Empathy survey before and after a T1DM skills lab. The study was approved as "Exempt" by the University of Mississippi IRB. During the lab, students performed glucose monitoring, insulin pen injections, insulin vial injections, and patient counseling). During the lab, students performed glucose monitoring, insulin injections, and patient counseling while wearing simulation glasses that modeled diabetic retinopathy and blurry vision. They then counseled a classmate about the use of the devices, assuming the classmate had vision problems. **Results:** The Kiersma-Chen Empathy scale was administered pre-/post-to student pharmacists in the second professional year in conjunction with a T1DM skills lab. Item level analyses suggest increased perceived empathy upon activity completion. Average composite scores increased from 81.3 (n=107) to 91.4 (n=104). Data was dichotomized based on agreement and disagreement for each of the survey questions. A Fisher's Exact was performed, and a significant difference ($p=0.010$, $\alpha <0.05$, 95% CI [0-0.399]) was depicted for the statement, "I will not allow myself to be influenced by someone's feeling when determining the best treatment", indicating more disagreement. **Implications:** Empathy is a vital component of patient care and helps to increase patients' overall satisfaction with pharmacists. Empathy is not always a focus of pharmacy education. The results of this study show that student empathy can be influenced by patient modeling, and this type of activity may influence patient-centered care.

Development and Implementation of a Clinical Oncology Pharmacy Learning Module in India. Keith A. Hecht, *Southern Illinois University Edwardsville*, Regan Healy, *Roseman University of Health Sciences*, Jingyang Fan, *Southern Illinois University Edwardsville*, Krishna Kumar, *Howard University*. **Objectives:** To increase Indian

pharmacy students' confidence in providing care for patients with cancer. **Method:** To help advance clinical pharmacy in India, the Indian Association of Colleges of Pharmacy developed the Pharmacy Practice Module-Advanced Learning Series starting in 2012. The oncology module is the 7th module in the series. For the oncology module a 3-day intensive seminar was developed. Faculty members from 3 different United States pharmacy schools developed a curriculum designed to introduce participants to a general approach to providing pharmaceutical care for patients with various malignancies. The topics included were tailored to address the unique needs of cancer patients in India. Participants were requested to complete a pre module and post module survey to assess their comfort with the subject matter. **Results:** 255 participants throughout India participated in this module, 170 (67%) of which participated in the surveys to some extent. Of the 170 survey participants, 151 were able to be matched with their pre and post module survey. Pre-module survey responses indicated that participants generally did not feel comfortable with the subject, scoring 9 of 11 areas as less than "somewhat confident". The average increase in participant comfort with the subject matter was 40%. Participants reported the highest increase in confidence with topics related to epidemiology, screening, and prevention (44%) and the least increase in topics related to supportive care (33%). **Implications:** While not intended as a substitute for pharmacy school curriculum, the oncology learning module was successful in increasing Indian pharmacy students' confidence in providing care for patients with cancer.

Development and Outcome Evaluation of Inter-Professional Education (IPE) Simulation Course in High-Fidelity Simulation Center (HFSC). Su Lee, *West Coast University*, Amber Verdell, *West Coast University*, Sarian A. Bangura, *West Coast University*, Woodi Wooding, Gina Rico. **Objectives:** To provide information on development/implementation and outcome evaluation of IPE Simulation Course in HFSC **Method:** Pharmacy and nursing programs cooperated to develop an IPE Simulation Course. The team reviewed IPE literature and developed evaluations including Quality Inter-Professional Education (QIPE) Competency. This course occurred at the HFSC in North Hollywood, CA, between 11/30/15-1/22/16. A retrospective review was conducted on outcomes of the course, including quantitative analysis of the QIPE. This study is approved by West Coast University Institutional Review Board (IRB). **Results:** A total of 35 second year pharmacy (P2) students and 79 nursing students participated in the IPE Simulation Course. Pharmacy and nursing faculty members facilitated 128 scenarios on 12 therapeutic topics. The overall pass rate for each IPE team was 79%. The pass rate for each category in QIPE was: Patient Centered Care 95%, Value/Ethics 96%, Roles/Responsibilities 92%, Team/Teamwork 97%, Evidence-Based Practice 84%, Safety 76%, Informatics/Technology 83%, Communication 88%, and Patient Education 70%. **Implications:** A retrospective study reviewed IPE Simulation Course outcomes in a HFSC. Seventy-nine percent of IPE teams passed each scenario. The category of Team/Teamwork had the highest pass rate of 97%, and Safety and Patient Education had the lowest of 76% and 70%. To adapt the QIPE for future courses, we will include more detailed rubric criteria on the QIPE Competency

Development and Student Perception of an Interprofessional Educational Event Involving Seven Professions. Jessica M. Bellone, *Concordia University Wisconsin*, Michael C. Brown, *Concordia University Wisconsin*, Michael McKinnis, *Concordia University Wisconsin*, Lois H. Harrison, *Concordia University Wisconsin*, Sarah R. Peppard, *Concordia University Wisconsin*, Michael P. Toppe, *Concordia University Wisconsin*, Ernest S. Stremski, *Concordia*

University Wisconsin, Kimberly Voigt, Concordia University Wisconsin, Brenda M. Jobe, Concordia University Wisconsin, Mary Weeden, University of Wisconsin-Oshkosh. **Objectives:** To integrate an IPE activity into a required course for second year pharmacy students in conjunction with nursing, physical therapy, occupational therapy, physician assistant, social work, and medical students, and to identify students' perception and feedback of IPE following completion of the activity. **Method:** Each professions' students were provided with the same patient case and profession-specific guided questions prior to two different IPE sessions. Each session began with presentations from healthcare professionals currently practicing in an inter-professional team. Students then broke into assigned IPE teams of 8-9 students and shared responsibilities of each of their respective professions. They also worked through the patient case, discussing concerns and blending their care plans. A survey followed completion of the second session to determine student's perception and feedback of the IPE activities. **Results:** The event included 230 students, 25 faculty, and 14 seminar presenters. The majority of students agreed or strongly agreed that they were able to identify how other professions' responsibilities were integrated to promote quality patient care (98.2%), were able to identify how other healthcare professionals may be integrated into a future career (96.9 %), and were more likely to pursue practice in a team-based care model based on what they learned from the IPE event (88.9%). **Implications:** Students identified clear benefits from being involved with the IPE activity. Areas of improvement for future IPE events include a broader representation of team members involved in the seminar presentations and shorter seminar presentations to allow more time for small group discussion.

Development and Use of a Team Charter in First-Year Doctor of Pharmacy Students.

Michael E. DeBisschop, *Manchester University.* **Objectives:** To assess student perceptions of the effectiveness and utility of a team charter assignment in developing leadership, teamwork, and self-awareness skills. **Method:** Students at the Manchester University Pharmacy Program are placed into year-long teams of four to five students each. In a first-semester Introduction to Pharmacy course, each student team created a team charter. This document described team mission and values; team and individual strengths and obstacles; team members' roles; team rules and expectations; and processes for feedback, assessment, and celebrations. Student teams were able to use this charter in a later team presentation assignment. Afterwards, students were surveyed to determine their perceptions and the utility of the team charter. **Results:** Eighty-three percent (60/72) of students responded to the survey. Most students thought the team charter helped them learn more about their team members (80% agree/strongly agree on a 5-point Likert scale); brought them closer together as a team (63% SA/A); and helped them understand what is necessary for effective teamwork (75% SA/A). Fifty-five percent of students agreed/strongly agreed that the charter helped them to work more effectively together and resolve team conflicts. Two-thirds of students agreed/strongly agreed they would use the charter for future team assignments. When selecting the three most useful sections of the charter, students rated team member strengths (60% of students), team member roles (47%), and team rules/expectations (47%) most highly. **Implications:** As students perceived the team charter as a useful exercise and resource for team-building, it will be continued next year with further assessment.

Development of Simulated Cases to Compare Student Knowledge Retention and Perception Versus Written Cases. Ann M. Nye, *Campbell University, Scott Perkins, Campbell University, Catherine Lewis, Campbell University, Mary Townsend.* **Objectives:** To

determine if there is a difference in academic performance and student learning experience/confidence between students doing a simulated case versus a written case in small groups. **Method:** This is a prospective, randomized crossover study of third year student pharmacists enrolled in Therapeutics III (PHAR 545). After attending a didactic session, students completed a pre-test, group case exercise, and a post-case quiz for two different cases. Students were randomized to two groups with each group doing one written case and one simulated case. Also students completed a survey regarding their perceptions and learning experiences of simulation laboratory exercises and written case exercises. Student post-quiz grades, change in pre and post quiz grades, and exam grades were compared using the wilcoxon rank sum. **Results:** 86 students were randomized and completed both cases with assessments. There was not a difference between the methodologies for quizzes or exams scores. **Implications:** Creating simulation experiences for students is a resource-intensive endeavor that, in many institutions, may require months of planning to ensure the logistics have all been accounted for. Developing activities that are beneficial to students will require that simulation is able to provide a more clinically-meaningful experience for students than written cases. Optimizing the utility of the simulation equipment, provision of adequate orientation to the simulation lab, and ensuring students have adequate time to solve the case should be considered when creating simulations.

Development of a Novel Independent Pharmacy Ownership Concentration (IPOC): A Needs Assessment.

Keith Hunsicker, *Wilkes University School of Pharmacy, Edward F. Foote, Wilkes University.* **Objectives:** Interest in independent pharmacy ownership appears to be on the rise among our pharmacy students. Our objective was to assess interest in an IPOC and garner input on a draft curriculum. **Method:** A proposed curriculum (including accounting/business courses, pharmacy didactic and PPE) was drafted. The needs assessment distributed included the proposed curriculum and a survey which was sent to all current pharmacy students (n=287) and a 12 pharmacy owners. The P1-P3 students were given paper surveys. P4 students and pharmacist-owners were given an online survey. **Results:** 97% of the P1-P3 students and 28% of the P4's responded to the survey. Overall, 37 students (16%) would have opted into the IPOC if offered. The distribution of interest was similar among the four classes although there is likely a response bias in the P4 class. Even students not interested in ownership, felt it was a good idea to have offered. Common concerns included money (potential summer/intersession tuition) and time commitment. The 9 pharmacy owners who responded to the survey were extremely positive about the IPOC. All 9 owners agreed (and 7 strongly agreed) that the IPOC would help students be successful. Owners agreed that accounting and management (and maybe marketing) courses are important components of an IPOC. Eight of the owners expressed strong interest in mentoring students during the P3 year project. **Implications:** Pharmacy students and independent owners are enthusiastic about an IPOC. Curricular development will continue and be presented.

Development of an Assessment Process for a Co-Curriculum through Mapping, Surveys, and Focus Groups.

Cameron C. Lindsey, *University of Missouri-Kansas City, Elizabeth R. Rodman, University of Missouri-Kansas City.* **Objectives:** To determine strengths and gaps for curricular and experiential affective domain offerings to inform strategic placement of co-curricular programming; align current co-curricular offerings with accreditation standards using key informants; and create assessment processes of co-curricular programming. **Method:** All syllabi for required didactic and experiential coursework were collected for the 2015-2016 school year and

analyzed for educational outcomes that included the affective domain Standards 3 and 4. These courses were then mapped by semester and year in the curriculum to identify where co-curricular programming could be implemented to solve any gaps between semesters. Faculty, students, and student affairs staff were invited to attend focus groups/complete surveys to learn about the co-curriculum and its goal. This audience was then asked to complete an inventory of their activity offerings/participation that may meet the co-curriculum definition and then devise learning outcomes for each activity. These learning outcomes were then mapped to key elements within the Standards. **Results:** Key elements, Education, Patient Advocacy, Leadership, and Innovation, had several semesters between introduction of the educational outcome in the P1 year and reinforcement. The development of learning objectives for each co-curricular activity that students, through organizations, employment, or personal interest, were currently involved was time intensive. This information was then used to create a reflective assessment process that was formatted to be accessible in an electronic format and to ensure educational outcomes within the Standards are achieved. **Implications:** An assessment process has been created that will evaluate students' application of affective domain skills during their professional degree enrollment.

Development of an Instrument to Measure Pharmacy Student Attitudes Toward Social Media Professionalism. Marie A. Chisholm-Burns, *The University of Tennessee*, Christina A. Spivey, *The University of Tennessee*, Melanie Jaeger, *University of Tennessee College of Pharmacy*, Jennifer S Williams, *The University of Tennessee*, Christa George, *University of Tennessee College of Pharmacy*. **Objectives:** To develop and validate a scale measuring pharmacy students' attitudes toward social media professionalism, and assess the impact of an educational presentation concerning social media professionalism. **Method:** A social media professionalism scale was developed and used in a pre- and post-assessment to determine effects of a social media professionalism presentation. The 26-item scale was administered to 197 P1 students. Exploratory factor analysis was applied to determine the number of underlying factors responsible for covariation of the data. Principal components analysis was used as the extraction method. Cronbach's alpha was estimated. Wilcoxon signed rank test was used to compare pre and post scores of each item, subscale, and total scale. **Results:** 187 (95%) students participated. The final scale had 5 subscales and 15 items. Subscales were named according to the professionalism tenet they best represented. Cronbach's alpha was 0.72. Higher scores indicated more professional attitudes. Scores of items addressing reading/posting to social media during class, an employer's use of social media when making hiring decisions, and a college/university's use of social media as a measure of professional conduct increased from pre-test to post-test ($p < 0.01$). The total scale score increased from pre-test to post-test (59.93 ± 5.87 vs 60.84 ± 6.32 , respectively; $p < 0.003$), as did the "honesty and integrity" subscale score (11.32 ± 2.33 vs 11.89 ± 2.0 , respectively; $p < 0.001$). **Implications:** The social media professionalism scale measures five tenets of professionalism and exhibits satisfactory reliability measures. Educational presentations are an effective method for improving pharmacy students' attitudes regarding social media professionalism.

Development, Implementation, and Assessment of a Day-Long Interprofessional Education (IPE) Learning Event. Reza Taheri, *West Coast University*, Justin Ako, *Master in Healthcare Administration/ West Coast University*, Teresa Brown, *Physical Therapy Department/ West Coast University*, Julie France, *School of Nursing/ West Coast University*, Mark Riddle, *West Coast University*, Heather Thomas, *Occupational Therapy Department/ West Coast*

University. **Objectives:** In 2013, West Coast University adopted Interprofessional Education (IPE) as an institutional priority, which led to the development of a day-long experience during which health profession students from different disciplines engaged in case-based problem-solving together. This study describes the design process and implementation of the event, reviews the assessment of associated learning outcomes, and discusses 'lessons learned' which may be of use to other institutions considering this kind of undertaking. **Method:** A faculty IPE team developed a video case and supplemental interactive materials. During the event, students moved through six faculty-facilitated stations in teams, addressing issues relevant to various phases of the case, from acute care to rehabilitation to discharge planning. Learning outcomes, based on the Interprofessional Education Collaborative (IPEC) competencies, focusing on roles/responsibilities, communication, teamwork, and values/ethics were assessed through the use of station artifacts, a quiz, an essay, and a survey. A total of 340 students participated in the event. **Results:** Data were analyzed by the university assessment office and faculty IPE team. Students demonstrated satisfactory achievement of all learning outcomes, enjoyed working with students from other disciplines, and reported increased understanding of how interprofessionalism leads to better patient care. Faculty feedback was overwhelmingly positive as well. **Implications:** IPE Day had a positive influence on students' attitudes towards working as a team, and enhanced professional identity and perceived competency in working with multiple professions. Opportunities for improvement include developing more rigorous learning goals, more "authentic assessment" of learning outcomes, and addressing logistical issues.

Dispositional Mindfulness in Pharmacy Students. Sneha Srivastava, *Chicago State University*, Diana Isaacs, *Chicago State University*, Bernice Man, Abraham Avalos. **Objectives:** Mindfulness is described as "paying attention in a particular way; on purpose, in the present moment, and non-judgementally." Knowing about students' mindfulness may allow for more targeted educational strategies. The primary objective of this study is to assess the five facets of dispositional mindfulness including awareness, describing, non-judgment, non-reactivity, and observing in pharmacy students. **Method:** This was a cross-sectional study where participants were given an IRB-approved survey asking for basic demographic information and the Five Facet Mindfulness Questionnaire (FFMQ). Descriptive statistics were used to make comparisons between mindfulness scores, age category, previous meditation experience, and professional year. **Results:** Of the 284 pharmacy students that completed the survey, the majority (54%) were 25 to 29 years old. Mean overall mindfulness score was 3.27 out of a possible 5. The highest mindfulness facet category was describing (3.45). There were small increases in awareness, describing, and observing in the older age groups. Fourth year professional students scored highest in non-judgment (3.58). **Implications:** Mindfulness scores were, on average, comparable to student samples from other studies. Knowledge of students' individual mindfulness may allow for more targeted educational activities. For example, the highest overall facet of mindfulness was describing, indicating that students may excel in their ability to describe in words their beliefs, opinions, emotions and expectations. Activities such as reflective writing may be ideally suited for students that score high in this area. Future studies should be conducted to confirm these findings and its impact on various educational strategies.

Do Pharmacy Students Cheat? A Survey of Motivations and Predictors of Cheating. Eric Ip, *Touro University California*, Bijal M. Shah, *Touro University California*, Shadi Doroudgar, *Touro University California*, Kathy Nguyen, *Touro University California*, Monica K Bidwal, *Touro University California*. **Objectives:** To assess the

prevalence, methods, and motivations for cheating among pharmacy students and to determine predictive factors for cheating. **Method:** Between November 2014 to March 2015, a 45-item cross-sectional survey was conducted among second year pharmacy students at all four Doctor of Pharmacy programs in Northern California. Student's t-test, Fisher's exact test, and logistic regression were used for data analysis. **Results:** Overall, 11.8% of students admitted to cheating in pharmacy school. Main motivations for cheating included fear of failure, procrastination, and stress. No significant differences were seen with gender, ethnicity, marital status, having children/dependents, pharmacy school GPA, plans to apply for a post-graduate program, Perceived Stress Scale (PSS) scores, or psychiatric diagnoses between students admitting to cheating versus those not admitting to cheating. In multivariate analysis, the only predictor for cheating in pharmacy school was a history of cheating in undergraduate studies (OR 11.69, $p < 0.001$). **Implications:** The information presented may help pharmacy schools better understand their student population and result in a reassessment of ethical culture, testing procedures, and prevention programs.

Drug Monograph Project: Results of Student Survey and Assessment.

Julie Kalabalik, *Fairleigh Dickinson University*, Anna Dushenkov, *Fairleigh Dickinson University*, Rachel Rivera, *Fairleigh Dickinson University*, Georgeta Vaidean, *Fairleigh Dickinson University*. **Objectives:** Reports on the impact of a drug monograph project (DMP) on pharmacy students' preparedness for formulary activities are limited. A 9-item survey and 5-item assessment were distributed to 85 second year pharmacy students to evaluate knowledge and confidence level in drug monograph (DM) preparation and presentation at a simulated health system pharmacy and therapeutics (P&T) committee meeting. **Method:** Students composed and presented DMs to a faculty panel representing a P&T committee. The 9-item survey consisted of questions addressing student confidence in preparing and presenting DMs based on Likert scale. The 5-item assessment included questions on the role of DMs, P&T committees, and formulary recommendations. Both the survey and assessment were distributed before and after the DMP, and results were compared. **Results:** The response rate for the pre-DMP survey was 69.4% and 90.5% post. The mean scores for all items were significantly higher for the post-DMP survey. Student confidence level in preparing drug monographs significantly increased following the DMP (2.69 vs. 4.13, $p < 0.001$). The response rate for the pre-DMP assessment was 65.9% and 91.7% post. The post-DMP assessment scores were significantly higher on 4 of 5 items. **Implications:** The DMP significantly increased students' confidence in creating and presenting DMs at a simulated health system P&T committee meeting, and student knowledge of the role of DMs and formulary recommendations also significantly improved. Our findings confirm a positive impact of the DMP project on pharmacy students' preparedness for formulary activities and endorse the DMP as an essential component of a drug information course.

Economic Analysis of Obtaining a PharmD Degree and Career as a Pharmacist. Marie A. Chisholm-Burns, *The University of Tennessee*, Justin Gatwood, *The University of Tennessee*, Christina A. Spivey, *The University of Tennessee*. **Objectives:** To evaluate the economic value of pharmacy education/career and the effects of the cost of private or public pharmacy school, the length of degree program, residency training, and pharmacy career path on net career earnings. **Method:** This study involved an economic analysis using Markov modeling. Estimated costs of education including student loans were considered in calculating net career earnings of four career paths following high school graduation: immediate employment; employment after

completing a bachelor's degree in chemistry or biology; immediate employment as a pharmacist; and employment as a pharmacist following one or two years of residency training. **Results:** Models indicated that throughout their careers (up to age 67), PharmD graduates may accumulate net career earnings of \$5.66 million to \$6.29 million, roughly 3.15 times more than high school graduates and 1.57 to 1.73 times more than those with bachelor's degrees in biology or chemistry. Attending a public pharmacy school after completing three years of pre-pharmacy education generally leads to higher net career earnings. Community pharmacists have the highest net career earnings, and PGY-1 residency-trained hospital pharmacists have greater net career earnings than those who immediately started their careers in a hospital setting. **Implications:** Findings demonstrate that investing in a pharmacy education yields favorable financial return when compared to other career trajectories with less education. Comparisons made between pharmacy career paths may be useful to student pharmacists when weighing post-graduate options, such as immediate employment versus residency training.

Effectiveness of a Clinical Pharmacokinetics and Iatrogenic Diseases Integrated Assignment for Improved Student Learning.

Anna Nogid, *Long Island University*, Theologia Ternas, *Long Island University*, Suzanna Gim, *Long Island University*. **Objectives:** To evaluate the effectiveness of a novel assignment integrating clinical pharmacokinetics and iatrogenic diseases concepts concurrently taught in two separate required courses. **Method:** An integrated assignment was developed by faculty from the Clinical Pharmacokinetics and Iatrogenic Diseases courses. Students in the third professional year enrolled in both courses, completed the integrated assignment as a component of both courses. Students were asked to evaluate two patient cases and respond to a series of questions. A 19-item survey was administered after the completion of the assignment to assess the effectiveness of the assignment on improving understanding of course content and student learning. Student performance on corresponding exam questions were compared to those of previous years to assess improvement in exam scores as a result of the integrated assignment. **Results:** Out of 182 students enrolled in both courses, 176 students completed the assignment and participated in the survey. The majority of students reported that the integrated assignment: increased their understanding of iatrogenic diseases and clinical pharmacokinetics concepts (90.3%), helped to retain information in long-term memory better than traditional assignments (86.6%), helped improve problem solving skills (89.7%) and made the topics more relevant to their future career (88%). Student performance on the examination did not improve as a result of the integrated assignment. **Implications:** An integrated assignment is effective in student perception of relevance and improved understanding of the material traditionally taught in separate courses. However, it does not result in an increase in examination scores.

Elective Course in Health Care Delivery and Payment Transformation.

Marie A. Smith, *University of Connecticut*. **Objectives:** Some required health professional didactic courses introduce health care delivery and payment reform concepts yet do not allow for in-depth discussions or self-directed student learning through presentations/projects. This course is designed to apply the Triple Aim elements to pharmacy practice, and develop a business case for emerging pharmacy practice opportunities with new health care delivery and payment models. **Method:** A comprehensive literature review identified course topics that included: health care delivery and payment reform elements from the perspective of providers, patients/consumers, payers, and policymakers; health reform/policy concepts that will

impact emerging pharmacy practice opportunities; and health reform/policy initiatives in the US and state level. Also, P4 student input identified topics that were not covered prior to clinical rotations. **Results:** A two-credit elective seminar course was piloted in AY 15-16 for P3 students. Topics included: US/state health care delivery/payment reform initiatives, medical homes, ACOs, care transitions, risk stratification and population health, pharmacist payment models, quality/performance measures. Learning methods included discussions on readings, journal club, hot topics, guest lecturers (ex. pharmacists, nurse care manager, physician and HIT executive) who presented “real-world” perspectives, and final project. Students were assessed on class discussion participation, topic reflections and essay assignments, presentation/final project content and delivery. A course evaluation showed that students’ pre-post knowledge of course topics increased and all students would recommend the course to other students. **Implications:** Expands curriculum to address health policy/practice innovations; seminar style engaged high-level student participation; student confidence to pursue non-traditional clinical rotations in medical homes/ACOs was increased.

Eliminating Pharmacy Borders through an International Inter-professional APPE Rotation Site in Rural Guatemala. Connie A. Valdez, *University of Colorado*, Sarah Scoular, Chandler Follett, Jodie V. Malhotra, *University of Colorado*, Kari L. Franson, *University of Colorado*. **Objectives:** To develop and implement an interprofessional APPE rotation site in rural Guatemala **Method:** The World Health Organization’s Interprofessional Practice Framework addresses the global shortage of healthcare workers by embracing interprofessional patient care models. Through a unique public-private partnership between the Guatemala Bolaños Foundation and the University of Colorado (including Center for Global Health, Children’s Hospital Colorado, and CU professional programs) a low-cost interprofessional healthcare center was developed. Pharmacy school faculty and administrators visited the healthcare center to identify clinic needs and potential APPE rotation opportunities which would model clinical pharmacy models for Guatemalans. The APPE rotation was developed by pharmacy faculty, and included pharmacy distribution activities, patient/technician/provider/community education, and clinical pharmacy services. Students on rotation were expected to be self-directed and independent. Pharmacy faculty served as primary preceptors in collaboration with a local Guatemalan pharmacist, medical residents, and the clinic directors. Each pharmacy faculty preceptor travelled to Guatemala with their student and provided clinic orientation and rotation expectations during week one. Pharmacy faculty were available remotely (weeks 2-6), via WhatsApp or Facetime, to answer pharmacy related questions and assist with clinical pharmacy visits. **Results:** For the 2015-2016 academic year, 3 APPE pharmacy students completed the Guatemala rotation, where they collaboratively educated members of the community, performed needs assessments, and solidified pharmacy’s role in an innovative healthcare model which can be implemented around the world. **Implications:** The University of Colorado Skaggs School of Pharmacy’s APPE rotation in Guatemala meets the needs of underserved populations and provides international interprofessional opportunities for fourth year pharmacy students.

Enhancing Pharmacy Students’ Self-Awareness Through Podcasts. Abigale Matulewicz, *Virginia Commonwealth University*, Laura M. Frankart, *Virginia Commonwealth University*. **Objectives:** CAPE 2013 expanded to include an affective domain to emphasize personal and professional development needed in pharmacy students. To promote the development of self-awareness, we designed a set of assignments involving podcasts that challenged students to examine

and reflect on personal knowledge, skills, abilities, beliefs, biases, motivation, and emotions that could enhance or limit personal and professional growth. **Method:** Fall semester 2015, P2 students in a Foundations of Pharmacy Practice course completed two GRASP (Gaining Reflective Attitudes and Skills through Podcasts) reflections based on the following prompts: 1. Examine and reflect on personal beliefs, biases, motivation and emotions that were challenged by listening to the podcast and 2. What knowledge, skills, and abilities of a pharmacist may impact the situation(s) described in the podcast? Students chose from faculty-selected podcasts with topics including pharmacoeconomics, professionalism, medication safety and ethics. At the end of the semester, students were surveyed about the impact of the assignment. **Results:** A total of 60/135 (44.4% response rate) students completed the survey. Questions were scored on a five-point Likert-type scale. Seventy-five percent of respondents agreed the assignment made them think about healthcare in a different way (mean, 3.9; SD: 0.99) and 61.7% agreed the assignments challenged their own beliefs and/or biases (mean, 3.6; SD: 1.1). Sixty percent reported thinking about and applying the concepts or issues in the podcast to other courses or experiences. **Implications:** Podcasts are a popular media capable of engaging students in reflection on current topics to enhance their self-awareness outside the classroom.

Equivalency of Faculty and Student Evaluations for Pharmacotherapy Group Presentations: Transforming Students to be Educators. Marina Kawaguchi-Suzuki, *Pacific University Oregon*, Ryan Gibbard, Anita J. Cleven, *Pacific University Oregon*, Jeremy Hughes, *Pacific University Oregon*, Brendan Stamper, *Pacific University Oregon*, Fawzy Elbarbry, *Pacific University Oregon*, Danielle Backus, Brandon Nuziale, *St. Louis College of Pharmacy*, Sarah Jane Faro, *St. Jude Children’s Research Hospital*, David Fuentes, *Pacific University Oregon*. **Objectives:** This study investigated the comparability of faculty vs. student (peer) evaluations for group presentations. Due to the subjective nature, peer evaluation may be helpful to minimize evaluator bias. It also provides insight for students as future educators into providing professional evaluation. **Method:** During a pharmacotherapy course, students developed 30-minute group presentations. Students and faculty members assessed the presentations on various criteria, using 0-10 scales with Qualtrics. Scores were compared for the amount and the quality of information (0=too little/easy, 5=appropriate, and 10=too much/complicated). Equivalency was evaluated by Two One-Sided Tests (TOST) procedure with equivalency defined as difference ≤ 1 . **Results:** Thirteen faculty members and 97 students participated in this study. Scores on the amount of information were considered equivalent for 8 groups. Of the 16 groups, the most equivalent score on the amount was: 5.43 ± 0.79 by faculty and 5.46 ± 0.97 by students ($p < 0.006$, mean \pm standard deviation). Scores on the quality of information were considered equivalent for 5 groups. Among the 16 groups, the most equivalent score on the quality was: 5.33 ± 1.03 by faculty and 5.38 ± 0.94 by students ($p < 0.01$). Overall, the scores given by students were more critical than those by faculty for both criteria ($p < 0.0001$). **Implications:** The ability to provide professional evaluations is an important part of being an educator. Although students tend to evaluate peers more stringently than faculty, they are capable of producing comparable scores to faculty. Additional training or repeated opportunities for peer evaluation could increase student-faculty equivalency.

Escape the Room Active Learning Strategy in an Elective Course. Sarah J. Steinhart, *University of South Florida*, Pooja Patel, *University of South Florida*, Olivia Pane, *University of South Florida College of Pharmacy*, Angela M Hill, *University of South Florida*. **Objectives:** Escape the Room is an active learning strategy requiring students to

use knowledge gained from lecture immediately preceding the activity during which student groups answer lecture topic questions and solve logic puzzles in an enclosed “locked” area from which they must successfully “escape” in one hour. **Method:** This assignment was used in elective P3 course PHA6730 Drugs of Abuse in 2015 (33 students). The instructor lectured for one hour then assigned students to one of three different themed rooms. Students individually had five minutes to enter their room and search for hidden clues. Clues pieced together opened a box containing lecture questions student groups answered and turned in within an hour to escape the room. Activity required space, funds, and time to design and construct rooms and puzzles. **Results:** Students were assessed using a pre-test prior to lecture and a post-test prior to completing the activity. Students scored an average of 50.5% on the pre-test and an average of 84.0% on the post-test revealing student engagement with the lecture material. Course evaluations revealed students enjoyed the activity. Future enhancements include administration of a post-lecture, pre-activity test to assess student learning based on lecture only versus lecture and activity. **Implications:** The Escape the Room activity flips the classroom to engage students with lecture material and problem solve in groups. Escape the room activities may be adapted to most courses within a college of pharmacy curriculum and other disciplines. It is currently being adapted to an ambulatory care elective within the college.

Evaluating Admissions Criteria for Suitability of Students in the Internationally Trained PharmD (ITPD) Degree Program. Jodie V. Malhotra, *University of Colorado*, Shaun E. Gleason, *University of Colorado*, Kari L. Franson, *University of Colorado*. **Objectives:** To evaluate admissions criteria for suitability of admitted students in the ITPD degree program based on performance in didactic and experiential coursework in the first year of the ITPD curriculum. **Method:** The ITPD degree is a hybrid pathway for international pharmacists within the School’s ACPE-accredited PharmD program. Admission criteria include an application, active pharmacy license, bachelor’s degree in pharmacy, written essay, sponsor letter and professional references. Applicants complete video-conferenced interviews, English proficiency evaluations and foundational sciences competency exams. Admissions scores increase with board certification, employment at a Joint Commission accredited institution, or teaching experience. Demographic information includes duration and setting of pharmacy practice and previous degrees. Admissions criteria and demographics are compared to student performance on didactic coursework and experiential evaluations. ITPD student performance is compared to entry-level PharmD (ELPD) in the first semester and North American-trained PharmD (NTPD) student performance in subsequent semesters. **Results:** Two years of ITPD student data are available. ITPD student overall GPA after two semesters was higher than ELPD students (3.8 vs. 3.5) in live courses. In three online courses, ITPD students had a higher average GPA than NTPD students (3.7 vs. 3.5). Admissions data are being assessed for specific criteria that predict student performance in the ITPD program. **Implications:** Although ITPD students are performing well to date, evaluating admissions criteria versus student performance in didactic and experiential course work of the ITPD curriculum allows for ongoing improvements in our admissions process. This information does not represent generalizable data.

Evaluating Pharmacy and Physician Assistant Students’ Awareness of Interprofessional Learning in a Mock Clinical Laboratory Exercise. Catherine Taglieri, *MCPHS University*, Carey Barry, Steven J. Crosby, *MCPHS University*, Joseph Ferullo, *MCPHS University*, Paul J. Kiritsy, *MCPHS University*, Ricky B. Thumar, Alice V. Randor, Bathri N. Vajravelu. **Objectives:** To evaluate pre and post

student responses to their involvement in a large class interprofessional laboratory simulation activity **Method:** Two hundred eighty seven pharmacy and 100 physician assistant (PA) students were invited to participate in an interprofessional educational (IPE) learning activity. PA students were initially required to review, diagnose and treat a simulated patient with a written prescription. PA students then presented their prescription to the pharmacy student in the mock community pharmacy lab. Paired in groups of two or three students (1 or 2 pharmacy with 1 PA student), the team worked together to resolve a faculty- introduced clinical twist to provide appropriate care to the simulated patient. A modified Readiness for Interprofessional Learning Scale (RIPLS) survey was administered prior to and post IPE activity. **Results:** The response rates on the pre- and post-RIPLS surveys were 78% and 37% respectively. Both student groups recognized a significant increase in appreciation for interprofessional health care team collaboration as a result of this exercise. Pharmacy students showed a 14.3% increased appreciation (43.11% to 57.43%; $p < 0.001$) while the PA students showed a 9% increase in appreciation (57.77% to 66.81%; $p < 0.001$). Comparing pharmacy students to PA students after the activity, PA students appeared to value the learning experience more (57.43% versus 66.81%; $p < 0.001$). **Implications:** Both student groups showed improvement in RIPLS measures for Professional Identity, Teamwork and Patient-centered care. Pharmacy students displayed greater gains in individual items pre- and post-survey while PA students overall scored higher on the RIPLS items.

Evaluating Synchronous Distance Education Impact on Academic Performance in a Multi-Campus Doctor of Pharmacy Program. Jillian E Hayes, *South Carolina College of Pharmacy*, Elizabeth C Rogers, *South Carolina College of Pharmacy*, Z. Kevin Lu, *South Carolina College of Pharmacy*, Elizabeth W. Blake, *South Carolina College of Pharmacy*, Kelly R. Ragucci, *South Carolina College of Pharmacy*, Wayne E. Buff, *South Carolina College of Pharmacy*, Phillip L. Mohorn, *South Carolina College of Pharmacy*, P. Brandon Bookstaver, *South Carolina College of Pharmacy*. **Objectives:** The South Carolina College of Pharmacy (SCCP) consists of two main campuses in Columbia (USC) and Charleston (MUSC) with a core curriculum taught via synchronous distance education. The objective of this study is to determine the impact of synchronous distance education on academic performance. **Method:** Examination scores from professional program courses at SCCP (110 and 80 students per class at USC and MUSC, respectively) from the 2010 through 2014 graduating classes were evaluated. Exam scores were examined based on whether the material originated predominantly live ($\geq 80\%$ from home campus), predominantly from distance ($\geq 80\%$ from distant campus), or mixed-delivery ($< 80\%$ originating from a single campus) The primary study endpoints are comparison of exam averages and failure rates on each campus based on origin of material. **Results:** A total of 432 exams with 82,440 individual scores were included in study analysis. Over the 5-year study period, 55% and 45% of lectures originated from MUSC and USC, respectively. When $\geq 80\%$ of the lectures originated from MUSC, median exam scores were 85.96% at MUSC and 83.74% at USC; failure rates were 6.72% (MUSC) and 9.90% (USC). When $\geq 80\%$ of the lectures originated from USC, median exam scores were 85.58% and 84.19% at MUSC and USC, respectively; failure rates were 7.07% (MUSC) and 9.31% (USC). When $< 80\%$ originated from a single campus, median exam scores were 84.77% at MUSC and 84.33% at USC; failure rates were 6.36% (MUSC) and 7.92% (USC). **Implications:** Over the 5-year study period no significant differences in exam averages were detected.

Evaluating the Jigsaw Method to Teach Valvular Heart Disease Concepts in an Advanced Cardiology Elective. Denise M. Kolanczyk, *Midwestern University*, Sally Arif, *Midwestern University*, Taylor Mancuso, *Midwestern University Chicago College of Pharmacy*. **Objectives:** Determine the effectiveness of the jigsaw method 1) on student immediate concept retention and 2) compared to traditional lecture; and 3) on student perception as an active learning method. **Method:** Forty third-year pharmacy students enrolled in an Advanced Cardiology elective were assigned a pre-reading about valvular heart disease (VHD) prior to a 2-hour class. Students were also pre-assigned one of four different valvular disorders. After completing a 10-question pre-quiz that assessed baseline knowledge, the jigsaw method was utilized during lecture when assigned students taught their respective valvular disorder to unassigned students. A post-quiz was administered at the end of class to assess immediate retention. The post-quiz also assessed student perception of the jigsaw method. Student performance on 8 final exam questions about VHD concepts were compared to the previous year, when VHD was taught using a traditional lecture. Data was analyzed using the paired samples t-test and descriptive statistics. **Results:** There was a significant increase in mean quiz scores (pre=56.75% and post=85.75%; $p<0.05$). Scores improved for both assigned (pre=58.8% and post=82.5%; $p<0.05$) and unassigned students, regardless of the pre-assigned valvular disorder (pre= 56.25% and post= 86.56%, $p<0.05$). There was no difference in final exam scores between jigsaw method (93.5%) and traditional lecture teaching (84.52%) ($p=0.48$). A majority of students (62.5%) recommended using jigsaw to learn other topics. **Implications:** The jigsaw method is an effective active learning strategy to teach valvular disorders.

Evaluation of Interprofessional Student Experiences in an Urban Free Clinic. Sharon E. Connor, *University of Pittsburgh*, Lauren J. Jonkman, *University of Pittsburgh*, Ferealem Assefa, *University of Pittsburgh School of Pharmacy*. **Objectives:** Interprofessional education and practice are essential components of health professionals' education. Interprofessional clinics are ideal settings to expose learners to a team-based model of care. At the Birmingham Free Clinic, teams of healthcare professionals work together to provide patient care services for the underserved. This study assesses the impact of this service-learning experience on interprofessional competencies for learners (students and post-graduate trainees) at the site. **Method:** Learners from three professions (pharmacy, medicine, and dentistry) were included in the study. All participants were asked to complete completed the Interprofessional Collaborative Competencies Attainment Survey (ICCAS), at the end of their experience. The 20-item validated survey measures pre and post agreement with interprofessional collaboration statements on a 7-point Likert scale. The following domains were assessed: communication, collaboration, roles and responsibilities of other health professionals, collaborative patient/family centered approach, management and resolution of conflict, and team functioning. **Results:** A total of 45 students and 9 practitioners completed the study (35 in pharmacy, 13 in medicine, 6 in dentistry). There was significant improvement ($p<0.0001$) in all domains: communication (5.1 to 5.9), collaboration (5.0 to 6.0), roles/responsibilities (5.0 to 5.9), patient centered approach (5.3 to 6.0), conflict resolution (5.6 to 6.10), and team functioning (5.2 to 6.0). **Implications:** Interprofessional learning experiences in underserved settings have significant impact on learners' interprofessional competence. This study demonstrates that even after one experience working as part of a team in this setting, learners improved in multiple domains. Further experiences would be expected to have a greater impact on learning.

Evaluation of Peer Assessment in Student Pharmacist Standardized Patient Interviews. Carrie Vogler, *Southern Illinois University Edwardsville*, Andrea C. Basso, *Southern Illinois University Edwardsville*, Tate Hohulin, *Southern Illinois University Edwardsville*. **Objectives:** There are very limited reports regarding the correlation of peer evaluation with faculty assessors in health care education and within the context of pharmacy curricula. This study aims to determine if fourth year pharmacy students serving as peer evaluators is in agreement with faculty assessment on a standardized patient interview exam. **Method:** Faculty and fourth year student pharmacists were trained to use a rubric to grade second year pharmacy students taking a standardized patient interview exam. Faculty served as live graders and peer evaluators graded using video footage from the exam. Scores from a global communication rubric and an interview checklist rubric were combined to calculate an overall grade. The scores given by the peer evaluators and faculty were analyzed. **Results:** Seventy three students were evaluated by 10 faculty and 7 peer evaluators. The p -value was set at 0.05. Using a paired t test there was a non-significant difference between faculty and peer assessment in the global communication score ($p=0.14$), interview checklist score ($p=0.67$), and overall score ($p=0.85$). A moderate correlation between faculty and peer evaluators was seen on the interview checklist ($r=0.5$) and overall scores ($r=0.4$). There was a low correlation on the global communication score ($r=0.124$). **Implications:** There is no significant difference between peer evaluators and faculty in assessing this standardized patient interview exam. Peer evaluators may be considered as assessors of a checklist item analysis, but may need more training in regards to global communication scoring.

Evaluation of Adherence and Persistence with Psychotropic Medications in Patients with Early Psychosis. Erika Titus-Lay, *Eskenazi Health*, Alex N. Isaacs, *Purdue University*. **Objectives:** Identify the need for medication adherence and persistence for the prevention of relapse and use of acute care in patients with early psychosis. **Method:** Medical records of clinic patients with a diagnosis of schizophrenia, schizophreniform, schizoaffective disorder, or psychosis not otherwise specified were retrospectively analyzed for one year following diagnosis. Pertinent data relative to drug therapy, refill history, and medication administration was collected. Medication adherence (proportion of days covered), persistence (gaps in therapy), and use of acute care services were compared between patients treated with a long-acting injectable (LAI), oral, or both formulations of an antipsychotic. A gap in therapy was defined as any length of time in which a patient did not receive their medication on time. **Results:** Fifty-six patients were included, 9 of which were on LAI therapy, 37 on oral therapy, and 10 on both oral and LAI at separate times throughout the year follow-up. Results show an average of 85.8% adherence, 0.78 gaps in therapy, and 0.2 acute care visits for LAIs, an average of 30.2% adherence, 1.19 gaps in therapy, and 0.27 acute care visits for oral agents, and an average of 75.8% adherence, 1.2 gaps in therapy, and 1.2 acute care visits for those on both formulations at separate times. **Implications:** Patients with early psychoses treated with LAI atypical antipsychotic had increased adherence, fewer gaps in therapy, and less healthcare requirements than patients treated with an oral atypical antipsychotic. This study shows the benefit of LAI antipsychotics over other formulations in the management of early psychosis.

Evaluation of an Interprofessional Education (IPE) Case Competition Activity for Health Professions Students. Jessica H. Brady, *The University of Louisiana at Monroe*, Savannah K. Posey, *The University of Louisiana at Monroe*, Jennifer G. Smith, *The University of Louisiana at Monroe*, Kristen A. Pate, *The University of Louisiana at Monroe*, Sherry Peveto, *University of Louisiana at Monroe*. **Objectives:** A single-day case competition involving pharmacy and nursing

students was developed and conducted with the purpose of measuring IPE readiness and core competencies. **Method:** Level 5 nursing students and third-year pharmacy students were invited to participate in the competition, with twenty students (10 nursing, 10 pharmacy) randomly selected to participate in a 4-hour patient case competition activity. A modified version of the Interprofessional Education Collaborative (IPEC) Competency Survey and the Readiness for Interprofessional Learning Scale (RIPLS) Questionnaire were administered before and after the activity. Teams of 4 (2 members from each discipline) completed a patient care plan that was judged by nursing and pharmacy faculty. Descriptive statistics were collected from survey responses. This project was deemed exempt by the institution's IRB. **Results:** Twenty students participated in the pre-survey and 18 (10 pharmacy, 8 nursing) participated in the post-survey. After completion of the interprofessional case competition, more students believed that they would be a more effective member of a healthcare team (55% v. 94%) and that they would have an increased ability to understand clinical problems when working with other healthcare students (50% v. 94%). Also, after the case competition more students would welcome the opportunity to work with other healthcare professional students (40% v. 72%). **Implications:** Participation in this IPE case competition demonstrated improved engagement with other healthcare professional students as assessed by the IPEC Competency Survey and the RIPLS Questionnaire. The competition also served as an achievable IPE activity for curricular integration.

Evaluation of Assessment Strategies and Student Perceptions of a Course Dedicated to Curricular Integration. Eunice P. Chung, *Western University of Health Sciences*, Marie L. Davies, *Western University of Health Sciences*, Hyma P. Gogineni, *Western University of Health Sciences*, Anne Kugler, *Western University of Health Sciences*, Donald I Hsu, *Western University of Health Sciences College of Pharmacy*, Mark Nguyen, *Western University of Health Sciences*. **Objectives:** Standards 2016 emphasizes the importance of curricular integration. WesternU has three courses solely dedicated to curricular integration. The purpose of this study was to compare different assessment strategies and student perceptions of the integration course. **Method:** All P2 students enrolled in the first integration course at WesternU, during fall 2015 were included. The different assessments evaluated were Comprehensive Knowledge Assessment (CKA) administered at the start of the course for assessing knowledge preparedness, Objective Structured Clinical Examination (OSCE), and Integrated Case-based Written and Oral Exam (ICW & ICO) administered at the end of the course to assess knowledge, communication, and critical thinking. Students completed a 5-point Likert-scale survey assessing perceived effectiveness of integration in achieving course objectives. **Results:** Of 129 P2-students, 125 completed the survey. While there were significant correlations between the different assessment results (CKA vs OSCE, CKA vs ICW, OSCE vs ICO; $p < 0.001$, $p < 0.001$, $p = 0.0119$ respectively), there was poor precision on all linear regressions ($R^2 < 0.2$). Over 80% agreed or strongly agreed that the CKA identified areas of strengths/weaknesses, the course helped them integrate different topics to better manage complex patients, and enhanced their communication with patients and providers. **Implications:** The significant correlation may stem from the fact that each assessment has a knowledge component. The high-variability in the correlations, however, suggests that different assessments may be measuring achievement of different skill outcomes assessed in the course. Student survey results indicate that the course effectively integrates prior knowledge and skill to prepare students to deliver pharmaceutical care.

Evaluation of Geriatric Content in a Doctor of Pharmacy Curriculum. Krista L. Donohoe, *Virginia Commonwealth University*, Kacie Powers, *Virginia Commonwealth University*, Anne M Masich, *Virginia Commonwealth University*, Kelechi C. Unegbu-Ogbonna, *Virginia Commonwealth University*, Emily P. Peron, *Virginia Commonwealth University*, Patricia W. Slattum, *Virginia Commonwealth University*. **Objectives:** To assess the integration of essential geriatrics content into the Virginia Commonwealth University (VCU) Doctor of Pharmacy program curriculum. **Method:** The didactic topics proposed in the 3rd edition of the American Society of Consultant Pharmacists (ASCP) Geriatric Pharmacy Curriculum Guide were compared to lectures taught during the didactic portion of the VCU pharmacy curriculum during the 2014-15 academic year. Course coordinators were asked to use a Google Doc to list the corresponding geriatric topics covered in their courses. An in-depth review using course syllabi and lecture handouts was conducted to verify geriatrics content in the courses. **Results:** Of the 60 courses taught, one-third addressed over 97% of topics listed in the ASCP Guide. Clinical therapeutics and special populations courses incorporated the majority of the essential geriatrics topics. Audiology was the only topic absent in the curriculum, and hematologic and respiratory diseases were included in core courses instead of elective courses. Discrepancies existed between course coordinator reported topic coverage and lecture handouts. Upon closer review of student lecture notes, only 85% of essential topics were specifically covered in the curriculum. Some topics within cardiology, neurology, urology, nephrology and inflammatory diseases discussed in the curriculum did not explicitly address older adults, although certain conditions may be associated with aging. **Implications:** Completing a comprehensive evaluation of geriatrics content taught in our curriculum identified topics that are inadequately covered, providing an opportunity to enhance curricular offerings in order to improve students' knowledge in caring for older adults.

Evaluation of the Use of a Virtual Patient on Student Performance in a Pulmonary Module. Catherine Taglieri, *MCPHS University*, Kristin Zimmerman, *Virginia Commonwealth University*, Steven J. Crosby, *MCPHS University*, Joseph Ferullo, *MCPHS University*, Dhiren K. Patel, *MCPHS University*, Tulip Schneider, *MCPHS University*. **Objectives:** To determine the effect of using virtual patient software on student performance in a simulated pulmonary clinic visit. **Method:** Students in a P3 required pharmacy practice course were assigned to two different groups. The control group ($n = 140$) completed a physical assessment clinic visit prior to completing activities with the virtual patient. The intervention group ($n = 41$) completed activities with the virtual patient prior to the laboratory session. Proficiency was evaluated via a rubric, consisting of four assessment items identified in advance by clinical practice faculty as showing increasing levels of patient engagement and increasing impact on patient care. Items included the patient's self-assessment, frequency of "quick-acting inhaler use", assessment of triggers, and the suggestion of an asthma action plan. Instructors documented the levels attained by each student. **Results:** The intervention group who experienced the virtual patient prior to the clinic visit performed better compared to the control group, 2.94 vs. 2.46 ($p = 0.003$) as measured by response item attainment. Evaluating individual response items, more students in the intervention group evaluated "quick-acting inhaler use", 55% vs 43% ($p = 0.042$) and more students addressed two or more assessment areas of patient care, 24% compared to 8% ($p < 0.001$). Additionally, 29% of the intervention group addressed all four assessment areas compared to 20% although not statistically significant ($p = 0.084$). **Implications:** Experience with virtual patient software significantly improved

students' ability to perform and effectively engage in conversation within a pulmonary module of a simulation laboratory. The software allows practice and feedback without increasing faculty workload.

ExamSoft Pilot: Assessing Metrics Based on Category Tagging to Evaluate Student Performance. Courtney Hochman, *University of Cincinnati*, Sanjeewa A Goonasekera, *University of Cincinnati*, Shauna M. Buring, *University of Cincinnati*, Patricia R. Wagle, *University of Cincinnati*. **Objectives:** To use the category tagging system in ExamSoft for evaluation of exam content and student performance for Therapeutics I and Therapeutics of Non-Prescription Drugs. **Method:** In the Fall semester 2015, ExamSoft was piloted in 6 courses in the first and second professional year of the Doctor of Pharmacy program. Six exams in Therapeutics I and four exams in Therapeutics of Non-Prescription Drugs were evaluated individually and in aggregate. Each exam in both courses was tagged using multiple content categories, question writer and Blooms Taxonomy. Longitudinal evaluation of the all assessments in each course was obtained. This research project was approved by the IRB at the University of Cincinnati. **Results:** Therapeutics I had 263 (79%) knowledge/comprehension questions and 69 (21%) application/analysis questions in aggregate. Therapeutics of Non-Prescription Drugs had 128 (67%) knowledge/comprehension questions and 62 (33%) application/analysis questions in total. Overall, course grades were correlated with categories in Therapeutics I showing the students scored lowest in contraindications/black box warnings, dose adjustments, and drug-drug interactions. In the Therapeutics of Non-Prescription Drugs, students scored lowest in contraindications, dose adjustments and pediatric recommendations. **Implications:** Categorization of questions allowed for easy quantification of both question type and Bloom's Taxonomy on exams in different courses. Student performance in certain categories is informative for faculty when emphasizing different course content.

Experience with the Script Concordance Test to Develop Clinical Reasoning Skills in Pharmacy Students. Kylee Funk, *University of Minnesota*, Claire Kolar, Sarah Schweiss, *University of Minnesota*, Jeffrey Tingen, *University of Virginia Health System*, Kristin K. Janke, *University of Minnesota*. **Objectives:** To analyze student and practicing pharmacist perceptions of a Script Concordance Test (SCT) adapted to pharmacist-specific decisions in care. **Method:** The SCT utilizes case vignettes and the introduction of new facts that may influence clinical decisions. Students compare their decisions with an expert pharmacist panel. Cases and a survey were distributed to a panel of twenty-three (23) practicing pharmacists. Following pharmacist ratings, the cases were discussed during a pharmacy therapeutics class. At the end of the session, students completed a survey about the SCT's value in building clinical reasoning skills and comfort with uncertainty. **Results:** Twenty (20) pharmacists and 138 students completed the SCT. All 20 (100%) pharmacists and 131 (95%) students completed the accompanying surveys. Student responses varied from the expert panel. For instance, when confronted with a drug interaction, 50% of experts reported it did not affect their original plan, yet 56% of students indicated that they were now much more likely to change their original plan. Pharmacists strongly agreed/agreed that clinical reasoning was an important skill to teach in the classroom (95%) and that the SCT was a useful tool to teach the skill (80%). Student respondents strongly agreed/agreed that the SCT improved their clinical reasoning skills (77%), helped them see clinical decisions in a new way (76%), and that they would like more SCT sessions in the future (80%). **Implications:** With practicing pharmacists and students reporting a positive response to the SCT, inclusion in more classroom settings should be considered to help understand clinical reasoning.

Exploring First Year Pharmacy Students' Readiness for Interprofessional Learning. Matthew W. Strum, *The University of Mississippi*, Donna S. West-Strum, *The University of Mississippi*. **Objectives:** The AACP Strategic Plan encourages faculty to collaborate with other health professions educators to provide effective, meaningful interprofessional education. Schools of pharmacy are incorporating interprofessional learning opportunities into their curriculum. The purpose of the study was to describe first year pharmacy students' readiness for interprofessional learning to provide guidance in creating and assessing these learning opportunities. **Method:** The study was IRB approved as exempt. First year pharmacy students at a southern University were surveyed during the first week of class. The survey contained the validated 19-item Readiness for Interprofessional Learning Scale (RIPLS) and demographic questions (e.g., race, gender, age, education, career plans). RIPLS is a scale with 19 items that respondents strongly agree or disagree using a 5 point Likert scale, and it is divided into 4 subscales. Descriptive statistics were conducted using SPSS. **Results:** 114 students completed the study. For the teamwork and collaboration subscale, the mean summated score was 41.15, for negative professional identity it was 12.85, for positive professional identity it was 18.37, and for roles and responsibilities it was 7.45. There were no differences in demographic groups. **Implications:** Students' readiness for interprofessional learning was high upon entry into pharmacy school. Faculty should capitalize on this readiness and have interprofessional learning activities early in the curriculum. The roles and responsibilities subscale was the weakest, indicating that pharmacy students need to learn more about the professional role of the pharmacist upon entry into the program.

Exploring the Over-the-Counter Aisle: A Case-based, Self-care Innovative Experience. Tiffany R. Shin, *The University of Kansas*, Matthew D. Kostoff, *The University of Kansas*, Abigail Winter, *The University of Kansas*. **Objectives:** To create, implement, and assess a novel case-based self-care assignment for first-year pharmacy students. **Method:** Evaluation of a new self-care assignment in a required first-year pharmacy didactic course. Students visited a community pharmacy to find appropriate self-care products based on 4 patient cases. Students took a picture with their recommended products and filled out a worksheet which included counseling and non-pharmacologic recommendations for each patient case. Voluntary surveys were given before and after the assignment to evaluate perceived confidence in recommending self-care treatments and satisfaction. The Wilcoxon signed-rank test was used for matched Likert-scale questions. **Results:** Participation in the pre-survey and post-survey were 143/155 (92%) and 146/155 (94%), respectively. The post-survey showed that 109/146 (75%) of students felt the assignment was helpful in increasing their confidence in self-care topics for real life application. Based on the 134/155 (86%) matched survey responses, students' confidence significantly improved in navigating the over-the-counter (OTC) aisle, interpreting a drug facts label, selecting appropriate OTC and non-pharmacologic treatments, and counseling on OTC and non-pharmacologic treatments ($p < 0.05$ for all). In completing the assignment, 66% of students responded that they were surprised by the number of products with the same ingredient but different names they encountered at the pharmacy. Many students commented that they enjoyed going to the pharmacy as part of the assignment. **Implications:** An assignment in a didactic course which required pharmacy students to visit a community pharmacy to solve patient cases was feasible and well received. Many students gained insight into self-care management through this assignment.

Factors Impacting Job Retention and Turnover Among Pharmacy School Faculty. Tristan Lindfelt, *Touro University California*, Sirena Lau, Mitchell Barnett, *Touro University California College of Pharmacy*, Eric Ip, *Touro University California*. **Objectives:** Rationale for Study: Faculty turnover is often associated with high costs and may ultimately result in unfilled positions. With more pharmacy schools opening and increasing enrollment, the demand for pharmacy faculty in the United States (U.S.) has substantially increased. Faculty retention has become a top concern for many schools. Although studies have examined faculty turnover in other professions, current data for pharmacy faculty remains limited. Assessing factors associated with faculty's intent to remain in academia may provide insight on how to enhance faculty retention. Objective/Intent: To determine factors impacting pharmacy faculty members' intent to remain in academia. **Method:** A 48-item survey using Qualtrics® was emailed to 4787 pharmacy faculty utilizing an email roster from the American Association of Colleges of Pharmacy (AACP). Specific variables assessed included: demographics, type of academic institution, lifestyle traits, career satisfaction, work-life balance, and stress levels. Statistical analyses were conducted using SAS for Windows 9.2 (Cary, NC). **Results:** Relative to assistant professors, full professors report that they are more likely to stay in academia. Faculty members who are more satisfied with their current positions or have greater work-life balance report a greater intent to stay in academia. Furthermore, faculty members who have worked in academia for more than 5 years and/or are pharmacy practice department faculty are more likely to remain in academia. **Implications:** Factors that impact the intent to remain in academia include a positive work-life balance, career satisfaction, and academic promotions.

Faculty Advising and Other Incentives for Best Performance on the Pharmacy Curriculum Outcomes Assessment. Nicholas Messinger, *University of Cincinnati*, Patricia R. Wagle, *University of Cincinnati*, Bradley E. Hein, *University of Cincinnati*, Shauna M. Buring, *University of Cincinnati*. **Objectives:** The Pharmacy Curriculum Outcomes Assessment (PCOA) has been administered to third-year students at the Winkle College of Pharmacy since 2012. Other than faculty advising, no incentives for best performance have been offered. The objective of the survey was to assess the impact of faculty advising sessions and other potential motivators as incentives for best performance. **Method:** Students were educated on the purpose of the PCOA and informed that faculty advising would take place after scores were reported. These sessions offered the opportunity for a faculty member to assist with interpretation of the score report and how to strengthen any identified weaknesses through the remainder of the curriculum. All students participated in a 15-minute faculty advising session from a faculty member who volunteered to participate after completing informal training. A 17-item electronic survey was completed voluntarily by the third-year students after the 2015 PCOA administration. Survey items consisted of questions on perceptions of one-on-one faculty advising and preference for potential incentives to motivate for best performance. **Results:** Forty-five (46%) students completed the electronic survey. Twenty-seven (60%) of students either agreed or strongly agreed that faculty advising was an incentive for best performance. All students either agreed or strongly agreed that faculty advising should continue for future offerings. Of potential incentives, a free Pre-NAPLEX exam (thirty-two students, 71%) was the most selected as an incentive for best performance. **Implications:** The faculty advising sessions were favored by the students. Faculty and student surveys will be developed and completed to determine areas for improvement.

Four Year Evaluation of Entering Student Pharmacists' Perceptions Regarding Spirituality and Its Role in Education. Bobby C. Jacob, *Mercer University*, Angela O. Shogbon, *Mercer University*, Annesha White, *University of North Texas System*. **Objectives:** To examine entering student pharmacists' spirituality using validated scales and to assess perceptions regarding the role of spirituality in education. **Method:** This prospective, observational study incorporated an electronically administered survey. Components included the Daily Spiritual Experience Scale (DSES), Duke Religion Index (DUREL), and an internally developed 7-item questionnaire on perceptions regarding the anticipated role of spirituality in pharmacy education and professional practice. The survey was offered to all entering first year student pharmacists at Mercer University over a four year period during the first week of the fall semester (2011 – 2015). Institutional Review Board approval was obtained. Descriptive and inferential statistics were used for data analysis. **Results:** A total of 580 students completed the survey (91% response rate). Most respondents were female (66%), between the ages of 21 and 30 years (88%), and Christian (70%). The majority of students anticipated that matters of spirituality would be significant components of the curriculum (57%), and would be integrated into eventual professional practice (75%). Most students felt that personal spiritual experiences would contribute to academic success (79%). Religious beliefs motivated many students' whole approach to life (66%). All individual measures of spirituality from the DSES and DUREL had significant positive correlation to the anticipated role of spirituality in education, academic success, and professional practice ($p < 0.01$). **Implications:** Entering student pharmacists expect to address spirituality in the context of pharmacy education and practice. Further research is warranted on the extent that colleges are incorporating spirituality into curriculums and effective methods for preparing students for practice-based spirituality related discussions.

Go Up or Get Out?! Promotion and Tenure Policies in Pharmacy Practice. Rebecca R Marcinak, *Western New England University*, Erika L. Vuernick, *Western New England University*, Katie L Schmidt, *Western New England University*, Chelsea A Thompson, *Western New England University*, Joshua J. Spooner, *Western New England University*, Daniel R. Kennedy, *Western New England University*, Eric C. Nemeck, *Western New England University*. **Objectives:** The purpose of this national survey was to determine promotion and tenure practices of clinical faculty at U.S pharmacy programs. **Method:** An online survey was designed and distributed via email to 134 pharmacy practice department chairs. The results were collected using SurveyMonkey and analyzed using GraphPad. **Results:** A total of 57 chairs responded. Most Departments of Pharmacy Practice (77%) offer a tenure track option, though only 29% of faculty are currently on the tenure line. There are numerous differences between tenure and non-tenure tracks. First, the majority (83%) of tenure track faculty must submit for promotion; 83% of these within the first 7 years of appointment. Whereas, 80% of non-tenure track faculty do not work in an "up or out" model. As expected, tenure track faculty have higher expectations for grant proposals per year (0.85 vs. 0.12; $p < 0.05$), and twice the annual expected publication rate (1.7 vs 0.85; $p < 0.05$). Service requirements were similar for both groups with an annual average committee commitment of 1.7 for non-tenure and 1.9 for tenure ($P = NS$). Non-tenure track faculty are expected to have an average percent effort towards clinical practice about twice as much as their tenure track counterparts (40 vs. 22; $p < 0.05$) with the majority (65%) spending at least 3 days per week at their practice site. **Implications:** There are considerable differences between workload expectations of tenure and non-tenure track faculty. Faculty can use this information when

considering academic appointments to ensure expectations are appropriate for their track.

Health Literacy Training: Enhancing Students' Knowledge and Confidence Using an Interactive, Multi-Faceted Approach. Christina L Mnatzaganian, *University of California San Diego*, Eduardo Fricovsky, *University of California, San Diego*, Brookie M. Best, *University of California, San Diego*, Renu F. Singh, *University of California, San Diego*. **Objectives:** To assess if an interactive health literacy program improves student pharmacists' knowledge and perceived confidence in identifying and addressing low health literacy in patients. **Method:** A health literacy training program was introduced in the first-year self-care curriculum. The first module introduced health literacy tools and required practicing the Newest Vital Sign literacy tool on volunteers outside the classroom setting. A subsequent workshop presented unique video vignettes created by pharmacy faculty in-house to illustrate poor as well as appropriate communication techniques for low health literacy scenarios. Students also created patient education-friendly materials by decreasing the reading level of several drug monographs. A 21-item survey assessed knowledge and perceived confidence prior to and after the training program. **Results:** Fifty-three and sixty students completed the pre- and post-intervention surveys, respectively. Twenty-five (59%) agreed or strongly agreed with pre-training confidence statements in 6/7 health literacy domains (using tools to assess health literacy, identifying typical behaviors, communicating with low health literacy patients, etc.) compared to 76-90% post-training ($p < 0.001$ per domain). Students were confident in providing a shame-free environment, both pre (72%) and post (83%) training. Knowledge improved in 3 of 14 areas; from 47-54% correct answers pre-training to 80-95% correct post-training ($p < 0.01$). Pre-training knowledge scores were high in the remaining 11 areas, from 74-98% correct, with non-significant improvements post-training. **Implications:** An interactive, multifaceted health literacy training program that incorporated utilization of assessment tools, video vignettes, and exercises to optimize patient education literature significantly improved student pharmacists' knowledge and their perceived confidence with recognizing and addressing low health literacy.

Identifying Motivators and Barriers to Student Completion of Instructor Evaluations: A Multi-faceted, Collaborative Approach. James W. McAuley, *The Ohio State University*, Jennifer Backo, *The Ohio State University*, Kristen Sobota, *Ohio Northern University*, Anne H. Metzger, *University of Cincinnati*, Timothy R. Ulbrich, *Northeast Ohio Medical University*. **Objectives:** To identify motivators and barriers to pharmacy student completion of instructor evaluations, and to develop potential strategies to improve the evaluation process. **Method:** Completed at four Ohio Colleges of Pharmacy, Phase I consisted of a student/faculty survey and Phase II consisted of joint student/faculty focus groups to discuss Phase I data and to problem solve. **Results:** In Phase I, the top three student-identified and faculty-perceived motivators to completion of evaluations were to (1) make the course better, (2) earn bonus points, and (3) improve the instructor's teaching. The top three student-identified barriers to completion of evaluations were having to (1) evaluate multiple instructors, (2) complete several evaluations around the same time, and (3) complete lengthy evaluations. Phase II focus groups identified a number of potential ways to enhance the motivators and reduce barriers, including but not limited to making sure faculty convey to students that the feedback they provide is useful and to provide examples of how student feedback has been used to improve their teaching/the course. **Implications:** Students and faculty identified motivators and barriers

to completing instructor evaluations and were willing to work together to improve the process.

If You Build It – They Won't Come: Student Utilization of Personalized Learning Analytics Data. Margarita V. DiVall, *Northeastern University*. **Objectives:** To evaluate student utilization and perceptions regarding personalized assessment-specific strength and opportunities (S&O) and longitudinal performance (LP) reports available within e-testing software. **Method:** We implemented ExamSoft e-testing and assessment management software in 2014. Development sessions were conducted with students during the first semester of ExamSoft use regarding access and interpretation of personalized feedback reports. Two cohorts of students (N=249) were surveyed after 4 semesters regarding use and perceptions of personalized learning feedback. **Results:** Among 187 respondents (75%), 5% of students reviewed every S&O report, 26% more than half the time, 48% occasionally, and 21% never reviewed these. Among 147 students who used S&O reports, 87% agreed that these were easy to access, 66% agreed they were easy to interpret, 66% agreed they were useful in identifying learning gaps, but only 51% reported reviewing old material. Only 41% of students were aware of LP reports and only 7% used these. Among those who used LP reports, nearly all agreed they were easy to access and interpret but only 61% used them to review material. Academic difficulty (i.e. failing exam or course) was reported by 24.6%. Among these students 76% reviewed their reports (40% with faculty/advisor and 36% on their own) and 36% of those who used the reports agreed that they assisted them with academic success. **Implications:** ExamSoft offers rich learning analytics data to students, faculty, and programs. Student utilization of personalized performance feedback was low and we need to intensify our student development on the importance of metacognition and self-regulation of learning.

Impact of Electronic versus Paper Rubrics to Assess Patient Counseling in a Skills-Based Lab Course. Eliza Dy-Boarman, *Drake University*, Sally L. Haack, *Drake University*, Anisa Fornoff, *Drake University*, Frank Caligiuri, *Drake University*, Michelle M. Bottenberg, *Drake University*, Ginelle A. Bryant, *Drake University*, Wendy Mobley-Bukstein, *Drake University*, Andrew Bryant, *Drake University*. **Objectives:** To determine the impact of an electronic counseling rubric and timely feedback on students' anxiety and exam preparedness in completion of a high stakes counseling exam in a skills-based lab course. **Method:** Two cohorts of third-professional year students were evaluated using the same rubric criteria: Cohort 1 (N=97) using traditional paper rubrics with only verbal feedback and Cohort 2 (N=104) using electronic rubrics. The electronic rubrics offered the ability to generate reports of student scores which were emailed to students immediately following the practice sessions. Faculty also reviewed electronic aggregate scores to emphasize key patient counseling points to the entire class. Both cohorts were surveyed to measure anxiety and preparedness in patient counseling skills one week prior to a practical exam. **Results:** Results showed no significant relationship between electronic rubric use and a decrease in students' anxiety ($p = 0.07$). There was a positive and significant relationship between the use of an electronic rubric and the timeliness of the feedback ($p < 0.01$). There was also a positive and significant relationship between timeliness of feedback and felt preparedness ($p < 0.01$). Perceived exam preparedness was higher among students using electronic rubrics with timing of feedback being the mediating process in increasing preparedness. **Implications:** By using electronic rubrics, students received more timely feedback and subsequently felt more prepared for their exam. Electronic rubrics may be adopted to assess other skill competencies within the course. Future

research may include assessing the impact of electronic rubrics beginning with first professional year students.

Impact of a Competition Using Sports-Based Models on Performance in Therapeutics Courses. Christopher W. Bresler, *University of Cincinnati*, Dylan M Barth, *Mercy Health*, Patricia R. Wigle, *University of Cincinnati*, Bradley E. Hein, *University of Cincinnati*, Nicholas Messinger, *University of Cincinnati*. **Objectives:** Relatively newer approaches to keep students engaged and enhance learning of course material include active learning activities and creation of games. The ultimate measure of success with new approaches is improvement in academic performance. The primary objective of this study was to determine the correlation between student participation in weekly, non-punitive quizzes using a sports-based model of competition and overall performance in the course. **Method:** Using the previous year's class notes, two students who had successfully completed the respective coursework created weekly review quizzes. Current students in each course decided whether to participate and participating students were tasked with forming a team of 4-5. Quiz performance resulted in team scores for competitions modeled after an NFL season (multiple matchups) and March Madness (single elimination). Quiz completion rates and scores were tracked using the online learning system. The University of Cincinnati Institutional Review Board approved this study. **Results:** Ninety (95%) second-year and seventy-seven (78%) third-year students elected to participate. Participation decreased in both groups halfway through the semester. Thirty-four (94%) of the participating teams completed the course with ≥ 4 points higher average team course grades than those who did not participate. Teams who completed more than half of the quizzes received ≥ 2 points higher average course grades. There was weak evidence to support a medium correlation for average number of team quizzes completed and the average team course grade. **Implications:** The results showed completing more quizzes and being a part of a team increased students' performance in the therapeutics courses.

Impact of a Simulated Electronic Health Record on Student Preparedness for Clinical Practice. Jennifer N. Smith, *University of the Sciences*, Jean M. Scholtz, *University of the Sciences*. **Objectives:** To determine the impact of NiaRx®, an educational electronic health record (EHR), on student understanding and level of preparedness to use an EHR in clinical practice. **Method:** This study was conducted using a one-group pretest-posttest design. Students completed a survey prior to and after completion of three case-based activities within the NiaRx® system. Data on student knowledge and preparedness to use an EHR were analyzed with the Mann-Whitney U test and data on student perceptions were analyzed using descriptive statistics. **Results:** A total of 182 and 174 students responded to the pre-intervention and post-intervention surveys, respectively. Prior to the intervention, 53% of students reported having no experience using an EHR. Pre-intervention survey results showed that 34% of students felt confident in their ability to efficiently find patient information in an EHR, which improved to 89% after the intervention ($p < 0.001$). On the pre-intervention survey, 15% of students agreed or strongly agreed that they had received adequate training in using an EHR, which improved to 83% after the intervention ($p < 0.001$). Post-intervention survey results showed that 94% of students felt the NiaRx® platform was easy to use and 77% of students felt NiaRx® provided a realistic clinical experience. Furthermore, 95% of students agreed that it is important to include opportunities to use an EHR in the pharmacy curriculum. **Implications:** Implementation of the NiaRx® platform improved students understanding and level of preparedness to effectively use an EHR. Early exposure to simulated EHR programs may enhance student confidence and performance in clinical practice.

Impact of a Statewide, Faculty/Student Pharmacist-Led Pneumococcal Vaccination Program. Joseph J. Carreno, *Albany College of Pharmacy and Health Sciences*, Emily Sutton, *Albany College of Pharmacy and Health Sciences*, Robert DiCenzo, *Albany College of Pharmacy and Health Sciences*. **Objectives:** To examine the efficacy of a statewide, faculty/student pharmacist-led, mobile pneumococcal vaccination program and to estimate and compare the vaccination prevalence within the residential facilities prior to and after vaccination clinics. **Method:** This was a retrospective quasi-experimental study with one pre-test group and one post-test group. Inclusion criteria: age ≥ 65 years, resident of pre-identified Vermont residential facilities. Exclusion criteria: history of Guillain-Barre syndrome, allergy to eggs, the pneumococcal vaccine or any of its components. Eligible patients received a pneumococcal vaccine from a clinic pharmacist. The outcomes evaluated included vaccination efficacy of the clinic (vaccines given/vaccines offered), and pre and post clinic vaccination prevalence (number of residents vaccinated/ total residents eligible). Chi-squared test was used to compare pre- and post-clinic vaccination rates. Sensitivity analysis was performed with multiple imputation analysis for patients with unknown vaccination status at baseline. **Results:** Thirteen different clinics were held in thirteen different residential facilities. 454 residents were screened, 30 (6.6%) were unvaccinated, 206 (45.3%) were vaccinated and 218 (48.1%) had unknown status. The clinics had an efficacy of 79% (123 vaccinated/154 offered). In patients with known vaccination status the prevalence of vaccination increased by 7% ($P = 0.001$). In the sensitivity analysis post-clinic vaccination prevalence was increased by 7–17% ($P = 0.001$). **Implications:** A statewide, faculty/student pharmacist-led mobile pneumococcal vaccination clinic is an efficacious method of delivering pneumococcal vaccines. Further research is needed to determine the impact on additional patient outcomes.

Impact of an Interprofessional Education Curriculum on Pharmacy Students in an Accelerated School of Pharmacy. Jennifer L. Donovan, *MCPHS University*, Cheryl Abel, *MCPHS University*, Morgan Comee, *MCPHS University*, Kaelen C. Dunican, *MCPHS University*, Evan R. Horton, *MCPHS University*, Anna K. Morin, *MCPHS University*, Amanda M. Morrill, *MCPHS University*. **Objectives:** To assess the impact of the pre-advanced pharmacy practice experience (pre-APPE) interprofessional education (IPE) curriculum on the readiness of pharmacy students for interprofessional collaboration before they begin APPEs in an accelerated school of pharmacy. **Method:** An anonymous pre-/post-survey was administered using the 19-item, validated, Readiness for Interprofessional Learning Scale (RIPLS) questionnaire to pharmacy students in the fall semester of their first professional year (P1 [baseline]) and to students in the summer semester of their second professional year (P2 [end of didactic]). **Results:** The response rate for P1 students was 20.7% ($n=73$) and 48.7% ($n=135$) for P2 students. More than 90% of students in both groups either strongly agreed/agreed with 12 of the readiness survey questions. The P2 students only strongly agreed/agreed 82.9% (vs. 93.2% P1) and 87.4% (vs. 91.8% P1) with "I welcome the opportunity to work on small group project" and "I welcome the opportunity to share lectures", respectively. Of the 5 remaining readiness questions, less than 25% of respondents in both groups strongly agreed/agreed with the statements: "I don't want to waste time learning with other professions;" "it is not necessary for health professionals to learn together," and "clinical problem solving can only be learned from my own group." More P2 students (34.8%) strongly agreed/agreed with "I have to acquire much more knowledge than other professions", than the P1 students (26.0%). **Implications:** Pharmacy students at the beginning the curriculum indicate they are ready to work collaboratively

with other healthcare professionals. The pre-APPE IPE curriculum reinforces their readiness.

Impact of Breast Cancer Awareness Presentations in Medically Underserved Communities. Christopher L. Farrell, *Presbyterian College*, Nancy H. Goodbar, *Presbyterian College*, Amy Hynes, Akayleeya Tate. **Objectives:** To evaluate the effectiveness of providing education related to breast cancer and the role of cancer genetic markers in targeted treatment therapies in medically underserved communities. **Method:** We utilized student-led presentations, targeting counties with lower health literacy and taking our presentations into local community centers, churches, and assisted living facilities. The material presented educated attendees on breast cancer awareness, genetic causes, prevention options, screening guidelines and targeted treatment therapies. Surveys were administered before and after the educational power-point presentation, utilizing questions with a five-point Likert scale to assess the change from baseline in patients understanding the material, their satisfaction with the presentation, and their willingness to get screened and/or discuss treatment options with their health care providers. **Results:** Significant improvement from baseline occurred in all topics presented, including: causes of breast cancer; disease inheritability; the importance of screening (including screening guidelines); risk factors associated with breast cancer; potential signs and symptoms of disease; and current treatment options. The majority of attendees reported gaining knowledge, whether they were breast cancer naïve, or multiple-episode survivors. Nearly every participant reported feeling confident to take a more active role in their future healthcare, including taking active roles in choosing personalized treatment plans. **Implications:** This program was not only serve to educate members of our communities in the best treatment options available to them for breast cancer, but has become a platform for furthering pharmacy students in their education and skills as they develop into healthcare providers.

Impact of Simulation Utilizing Standardized Patients on Insulin Injection Technique Knowledge Among First-year PharmD Students. Riley D Bowers, *Harnett Health*, Robert K. Tunney, *Campbell University*, Kimberly E. Kelly, *Campbell University*, Beth P. Mills, *Campbell University*, Katie E. Trotta, *Campbell University*, C. Neil Wheelless, *Harnett Health*, Richard Drew, *Campbell University*. **Objectives:** We sought to compare changes between pre- and post-intervention test scores, along with counseling checklist scores, assessing insulin injection techniques among students using traditional learning either with or without simulated standardized patients. **Method:** We randomly divided a cohort of 103 students into 2 groups designating half to receive simulated patient interaction in addition to traditional coursework and half to receive traditional coursework alone. All students completed a pre- and post- intervention knowledge test at the beginning and end of each session. The intervention group counseled a standardized simulated patient on the use of insulin using the teach-back method. T-tests were utilized to assess mean differences in test scores and checklist scores between groups. **Results:** The group receiving standardized patient interactions had a mean improvement in test scores compared to the control group (21.5% vs. 17.8%, $p=0.07$). There was a significant difference in post-instruction counseling checklist scores in the intervention group compared to the control group (72% vs. 63%, $p=0.0012$). **Implications:** Introducing simulated patient interactions into the first-year pharmacy skills lab demonstrated an improvement in student counseling skills and has the potential to improve knowledge comprehension. Our findings are in agreement with previous studies which have shown that applying didactic-based knowledge to simulated patient interactions

benefits student knowledge and retention of learning material. Our results suggest the potential benefit of incorporating simulation-based activities into the structure of pharmacy practice courses at a co-educational, private university.

Implementation and Assessment of an Elective Course on Ambulatory Care Pharmacy Practice. Tarryn Jansen, *South Dakota State University*, Rachel Elsey, *South Dakota State University*, Surachat Ngorsuraches, *South Dakota State University*, William Hayes, *South Dakota State University College of Pharmacy*. **Objectives:** To implement an elective course on ambulatory care and to assess its impact on students' knowledge and confidence in providing adult outpatient care. **Method:** A 2-semester hour elective course was developed to improve third-year doctor of pharmacy students' clinical knowledge and skills in an ambulatory care setting. The course included sessions for hypertension, dyslipidemia, diabetes mellitus, and anticoagulation. Various instructional methods were used including case based learning and stimulated practice using an electronic medical record and mock clinic visits. A total of 35 students enrolled in the course and they were divided into eight groups. Students were assessed on SOAP notes, quizzes, an online assignment, and mock clinics. Individual and group scoring was used. A self-assessment survey was used to examine students' confidence in knowledge and skills before and after enrollment on a 5-point Likert scale. Students' assignment scores were descriptively analyzed. Their confidence change was also statistically tested. **Results:** The average scores of individual SOAP note, group SOAP note, quizzes, a mock clinic, and online assignment were 22.59 (out of 30), 54.87 (of 60), 13.23 (of 15), 17.51 (of 18), and 14.06 (of 15), respectively. In average, students' confidence in knowledge and skills pertaining ambulatory care increased from 2.55 to 3.98 before and after they took the course ($p=0.000$). **Implications:** An elective course on ambulatory care using case-based learning and simulated patient visits on commonly encountered chronic disease states positively impacted students' learning and confidence delivering care in an ambulatory care practice setting.

Implementation and Evaluation of a Women's Reproductive Health Certificate Program. Shareen El-Ibiary, *Midwestern University*, Brooke Griffin, *Midwestern University*, Erin C. Raney, *Midwestern University*, Kathleen Vest, *Midwestern University*. **Objectives:** Women's reproductive health issues such as contraception, infertility, preconception care and medication use in pregnancy are important for pharmacist competence. To date, evaluation of a women's reproductive health certificate program for pharmacists has not been published. Our objectives are to evaluate and describe the implementation of a women's reproductive health certificate program for pharmacists. **Method:** A survey of participants in a women's reproductive health certificate program was conducted. The program consisted of a home study and live 8-hour session (totaling 27 continuing education hours) intended for pharmacists who provide care to reproductive-age women and/or who desire additional training in women's reproductive health issues. Topics included contraception/emergency contraception, infertility, preconception and pregnancy/lactation. A 46-item, validated online survey tool assessed perceptions of the program after completion. The study was approved by the University's IRB. **Results:** All program participants completed the survey ($n=21$). Top reasons for program completion were "to increase knowledge in women's health" (95%) and "provide better care to my female patients" (90%). On a 5-point Likert scale from strongly disagree to strongly agree, self-perceived knowledge of women's reproductive health improved (2.35 pre-session, 3.95 post-session, $p<0.001$) as well as confidence in counseling (2.35 pre-session, 3.85 post-session; $p<0.001$). All

participants strongly agreed or agreed that the information was helpful to their practices. Only 33% agreed that the women's reproductive health education provided in their pharmacy curricula prepared them well for practice. **Implications:** A women's reproductive health certificate program was well-received and perceived as useful to practicing pharmacists.

Implementation of Community Pharmacy Dispensing Software (MyDispense) in an Advanced Pharmacy Practice Course. Clark Kebodeaux, *University of Kentucky*, Keith Sewell, *Monash University*.

Objectives: MyDispense is an interactive community pharmacy simulation program designed to build students' confidence related to community pharmacy practice. MyDispense was implemented in the Advanced Pharmacy Practice course at St. Louis College of Pharmacy during the P3 year as an activity and assessment for competency in the community pharmacy setting. In order to make future curriculum improvements, the objective of this study is to evaluate the usefulness and applicability of the MyDispense program into a required course. **Method:** The study will consist of an anonymous online survey available to students in the Advanced Pharmacy Practice course for two weeks following completion of the program. The survey is designed to evaluate the usefulness of the MyDispense online pharmacy program implemented during the course of the semester. **Results:** 98 responses (43% response rate) were collected from students who completed MyDispense as part of the required course. 69% (n=68) of respondents stated MyDispense was straightforward to learn, 75% (n=73) stated MyDispense was more realistic than similar cases on paper, and 78% (n=75) appreciated the opportunity to learn without the consequences of a prescription error. Students felt that MyDispense should be implemented either throughout the curriculum (31%, n=30) or prior to the community IPPE course (23%, n=22). Students' overall perception of MyDispense was not affected by previous community pharmacy experience ($p=0.17$). **Implications:** This study to evaluates the impact of MyDispense with a cohort of P3 students in an Advanced Pharmacy Practice course. This data can be used to help implement MyDispense in other pharmacy school curricula.

Implementation of a Pharmacogenomics Laboratory. Kacie Powers, *Virginia Commonwealth University*, Krista L. Donohoe, *Virginia Commonwealth University*, Dayanjan S Wijesinghe, *Virginia Commonwealth University*, Tonya M Buffington, *GENETWORx*, Daniel Contaifer Jr, *Virginia Commonwealth University*. **Objectives:** To implement a laboratory session to teach pharmacy students key concepts of pharmacogenomics in clinical practice. **Method:** During the laboratory session, students evaluated patients' medication regimens with regards to their pharmacogenomic profiles and recommended appropriate therapy modifications in a series of cases. Students also counseled a "patient" on the interpretation of their pharmacogenomic profile. Students completed a pretest, posttest, and a confidence survey to measure changes in their knowledge and confidence. Students also completed an evaluation of the activity after the lab. **Results:** On average, students answered 69% of knowledge based questions on the pretest correctly and 83% on the posttest. Additionally, students' confidence improved in each of the five areas assessed. Based on evaluations (response rate: 51%), students found the lab activity well-organized, at an appropriate level, and relevant to pharmacy practice. The activity was rated as good or excellent by 93% of respondents. **Implications:** Due to deficiencies in pharmacogenomics education and training across pharmacy schools in the United States, implementing this laboratory session to teach pharmacy students about clinical pharmacogenomics could be a valuable addition to pharmacy curricula.

Importance of Teaching Genetic Counseling in the Pharmacy Program. Christopher L. Farrell, *Presbyterian College*, Nancy H. Goodbar, *Presbyterian College*, Mandy McCaslan, *Presbyterian College*, Jennifer Lee, Lauren Baggett. **Objectives:** To evaluate the impact of the genetic counseling lecture and exercise on the students' understanding of communicating the clinical importance of pharmacological treatment based on the DNA results of the patient. **Method:** Second year pharmacy students in the pharmacogenomics course were included in the genetic counseling study. Students were presented a lecture on genetic counseling from a geneticist and a genetic counselor from the Greenwood Genetics center. To assess student growth in their awareness of their own skills and abilities related to counseling patients on pharmacogenetics, students were given a pre and post survey of (#) questions. These questions incorporated the ACPE standards for communication as well as specific learning objectives from the lecture. **Results:** The survey results yielded positive feedback in regards to the case study implementation. On a 5 point scale, the average responses were higher after the lecture. Many students had a high baseline on the communication and counseling skills that were identified through the ACPE standards. However, on those skills which were deemed "genetic counseling specific", students had a lower baseline score. In the post survey, students showed growth in all areas. **Implications:** Genetic counseling lecture and exercise within the course were well received by the pharmacy students, as evidenced in the satisfaction survey questions administered along with the post lecture growth assessment. As pharmacological healthcare expert, pharmacists will play a crucial role in the pharmacogenomic field and they need to be able to clearly communicate the clinical importance of the genomic results to the patients.

Improving Student Conflict Resolution Skills Through Increased Awareness of Self and Others' Communication Styles. Jane Shtaynberg, *Long Island University*, Suzanna Gim, *Long Island University*, Anna Nogid, *Long Island University*, Joseph Bova, *Long Island University*.

Objectives: To evaluate the effectiveness of a communication styles workshop on improving students' awareness of communication styles and conflict resolution skills **Method:** Fourth year pharmacy students participated in a communication styles workshop as part of a required seminar course. An 8-item pre and post-survey was administered to assess the effectiveness of the workshop on improving student awareness and knowledge of communication styles. The workshop included descriptions of communication styles, interpretation and application of self-assessment results, and tailoring communication through identification of communication styles of others. Cases were also provided for small group discussions to practice application, and share conflict resolution strategies. **Results:** Out of 180 students who participated in the workshop, 162 students participated in the survey. Based on pre and post-survey results, the workshop improved students' knowledge of communication styles of self and others, as well as how to avoid/ resolve conflict based on communication styles ($p<0.001$ for all survey items). During the workshop, the majority of students demonstrated the ability to correctly identify communication styles for 5 facilitators with whom they interact on a regular basis. Additionally, students were able to effectively discuss situational cases and recommend strategies for tailoring communication to avoid/resolve conflict. After completion of the workshop, participating students reported the workshop topic was relevant (75.9%), they learned something they didn't know before (79%), and they would recommend the program to others (72.2%). **Implications:** Participation in communication styles workshop is an effective method of improving student awareness of communication styles and conflict resolution skills.

Incorporating Healthcare Informatics Within a Pharmacy Curriculum: Assessment of Student Perceptions. Maureen Sullivan, *Touro College of Pharmacy-New York*, Martha M. Rumore, *Touro College of Pharmacy-New York*, Batoul Senhaji-Tomza, *Touro College of Pharmacy-New York*. **Objectives:** Recognizing the importance of informatics knowledge and skills that pharmacy students should possess, an Informatics elective course was added into the Touro College of Pharmacy curriculum in 2012. This research's objective was to assess student's perception of the value of healthcare informatics in the pharmacy curriculum. **Method:** A systemic literature review was conducted regarding student perceptions of informatics in pharmacy curricula. For 3 consecutive years, an online survey was administered to pharmacy students who completed an elective course in Informatics to assess student perceptions of content relevancy to pharmacy and ascertain whether the course stimulated further informatics interest. The survey was measured via a Likert 5-point scale and descriptive statistics were used to analyze results. **Results:** The systemic literature review revealed a paucity of literature. Of the seventy-four survey respondents, 97% either agreed or strongly agreed that informatics was relevant to the practice of pharmacy, while 81% responded that the course stimulated their interest in informatics. Responses to open-ended questions highlighted that the course exposed students to areas that would be beneficial to their pharmacy careers. **Implications:** A course in Healthcare Informatics is regarded by students as highly relevant to the practice of pharmacy and can significantly increase student's interest in an informatics career. In the 2016 ACPE Standards, expertise in informatics is identified as one of the required competencies for pharmacy graduates. This research will assist us in incorporating informatics into the core curriculum and provide a basis for additional pharmacy colleges to institute formal informatics instruction.

Increasing Electronic Cigarette Awareness Amongst Teens: Community Education by Advanced Pharmacy Practice Experience Students. Amanda M. Morrill, *MCPHS University*, Cheryl Abel, *MCPHS University*. **Objectives:** The purpose of this study is to describe the development and delivery of an interactive presentation and survey tool by students of pharmacy to assess the exposure, understanding, and perception of electronic cigarettes (e-cigarettes) amongst teens. **Method:** The interactive presentation, utilizing a Jeopardy style game, was developed by students of pharmacy during a Patient Advocacy APPE and presented at local high schools. After a brief didactic introduction, students, in teams, competed in the game answering questions about e-cigarettes. The student of pharmacy provided pearls of information throughout. An anonymous survey tool, assessing teens' exposure to and knowledge of e-cigarettes, was administered at the end. **Results:** Of the 98% students reporting familiarity with e-cigarettes, 33% had tried one in the past. After participation in the game, 97% of the students stated that they learned new information. Students of pharmacy reported increased comfort with public speaking and adolescent patient interaction. **Implications:** Due to a paucity of data and FDA regulation, the safety of e-cigarettes remains unknown. However, use amongst teens continues to increase. The survey tool indicated that the majority of teens were familiar with e-cigarettes, illustrating their popularity. Presentation by students of pharmacy rather than an authority figure likely increased the comfort level of the teens, and the fun, competitive environment increased engagement. The student of pharmacy also had the opportunity to practice public speaking and utilize appropriate terminology for adolescent populations. Using both a didactic lecture and interactive activity may demonstrate success in other community settings such as senior centers and health fairs.

Influence of an Ambulatory Care Elective on Career Interest and Perception of Ambulatory Care Practice. Jennifer Simon, *University of Charleston*, Cassandra Legari, *University of Charleston*, Anojinie Karunathilake, *University of Charleston School of Pharmacy*, Jigna Patel, *West Virginia University*. **Objectives:** To assess the impact of an ambulatory care elective on student understanding of ambulatory care pharmacy practice, career interest, and interest in residency training. **Method:** All students in their third year of pharmacy school, including those enrolled in an ambulatory care elective course, were surveyed. Students were asked a series of questions related to interest in postgraduate residency training, pharmacy career interest, and knowledge of ambulatory care pharmacy practice. The survey was administered during the first week of the Fall 2015 semester and again during the last week. Survey results were compared pre- and post-semester and between elective and non-elective students. **Results:** Twenty-five of 72 non-elective students and 13 of 14 elective students responded to both surveys. Non-elective students interested in residency training increased from 48% to 56% post-semester, but decreased among elective students from 69% to 62% ($p=0.6835$ between groups). A significantly higher number of elective students changed their pharmacy career interest post-semester ($p=0.0087$), but the number of students interested in a career in ambulatory care remained mostly unchanged in both groups. More elective students than non-elective students felt they understood the process used to bill for ambulatory care pharmacist services ($p=0.011$) and the role of the ambulatory care pharmacist in the healthcare team ($p=0.006$) post-semester. **Implications:** An elective course provides confidence in understanding of ambulatory care pharmacy but does not increase student interest in residency training or a career in ambulatory care. Future studies should investigate the changing career interests among elective students.

Informing a Critical Care Elective Curriculum Through a Survey of Hospital Pharmacists. Sarah R. Peppard, *Concordia University Wisconsin*, Ann Biesboer, *Concordia University Wisconsin*, Ann Patten, *Concordia University Wisconsin*, Michael C. Brown, *Concordia University Wisconsin*. **Objectives:** Concordia University Wisconsin School of Pharmacy (CUWSOP) offers a critical care elective course. Topics are determined by faculty with guidance from available literature and guidelines. This survey informed the appropriateness of the elective curriculum, determining which critical care topics are utilized by practicing hospital pharmacists. **Method:** A web-based survey administered via Qualtrics® was emailed to 839 hospital pharmacists in Wisconsin compiled from the state pharmacy organization and the CUWSOP experiential education department. **Results:** There were 364 (43%) respondents to the survey. Respondents' most common areas of practice included acute care (71%), central pharmacy (65%), critical care (47%), and emergency room (28%). These were the primary areas of practice for 39%, 9%, 11%, and 2% of respondents, respectively. The following percentages of respondents reported using these topics daily: stress ulcer prophylaxis (58%); acute kidney injury (46%); venous thromboembolism (42%); sedation, analgesia, delirium (36%); and infections in the intensive care unit (35%). All of these topics are covered in the required or elective curriculum. The following percentages of respondents reported never using these topics: burn therapy (70%), management of a transplant patient in the intensive care unit (48%), intracranial pressure monitoring (39%), acute spinal cord injury (34%), and circulatory assist devices (33%). The latter three topics are covered in the elective course. **Implications:** The majority of topics covered within the critical care elective reflect the current practice of pharmacy in the state of Wisconsin. These results will inform future content of the elective course.

Innovative Instructional Pedagogy: Linking PICO, POEMs, PBL in Perfecting Critical Appraisal Skills of PharmD Students. Miriam Ansong, *Cedarville University*, Brenda Pahl, *Cedarville University*. **Objectives:** To measure students' ability to demonstrate a mastery of critical literature appraisal skills to clinical cases. **Method:** ACPE 2016 standards 10 mandates pharmacy education be patient centered (core 1), self-directed (core 2), and collaborative (core 3) to create lifelong learners. This presents an opportunity for curriculum innovations. Cedarville University elected TBL and PBL pedagogies to create horizontal-vertical integrated curriculum. To equip students with necessary skills, critical appraisal of literature to cases became a pivotal point. A comprehensive literature search in PubMed, IPA, Embase, Cochrane library, and CINAHL showed no previous work. An algorithm was created to map PICO to core 1, PBL to core 2 and POEMs to core 3. Clinical cases (3) were developed targeting audience (provider, pharmacist and patient) and assigned to students. Students were directed to utilize the six-steps approach to seeking evidence and formulate answerable questions using PICO. Literature searches were conducted for cases. Critical appraisal of primary literature were initiated. POEMs was used to evaluate the applicability of the evidence to clinical cases. Students received feedback via online Moodle Platform. A survey instrument was created to assess students' ability and mastery of required set skills. **Results:** Students (36) were evaluated, 78% demonstrated the ability to evaluate the evidence and apply to clinical case. All students indicated an understanding of PICO, POEM and PBL with core 2016 ACPE standards. Lack of effective collaboration was observed. Result will be presented at the conference with post semester data re-analysis. **Implications:** This method was effective. The authors plan to incorporate it throughout the curriculum to enhance students learning.

Instilling a Rational and Methodical Approach to Acquiring Information to Answer Well-constructed Clinical Questions. Shannon L. Reidt, *University of Minnesota*, Frank Sayre, *University of Minnesota*, Jennifer Chen, *University of Minnesota*, Karen MS Bastianelli, *University of Minnesota*, Sara Sobota. **Objectives:** To instill a rational and methodical approach by which first year pharmacy students evaluate information resources based on relevance, validity, and convenience to answer well-constructed clinical questions. **Method:** A team consisting of clinical faculty, laboratory faculty, and a librarian redesigned instruction to focus on instilling a rational and methodical criteria for selecting drug information resources based on relevance, validity, and convenience instead of teaching characteristics of specific resources. Constructing a clinical question using PICO (population, intervention, comparison, outcome) was also taught. After five hours of instruction, students completed an assignment requiring them to formulate clinical questions using PICO and justify their choice of information resource using the criteria of relevance, validity, and convenience. **Results:** When constructing PICOs, student performance was highest when identifying the population with 51% of student responses graded as "strong" or "excellent". Student performance was lowest when identifying the comparison with 60.2% graded as "limited" or "not evident". Related to justifying the selection of an information resource, student performance was highest when using relevance criteria with 36% of responses graded as "strong" or "excellent". Student performance was lowest when using validity criteria with 84.4% of responses were graded as "limited" or "not evident". When using convenience as criteria for selecting a resource, 22% of responses were graded as "strong" or "excellent". **Implications:** Although students were successful at some components of constructing a PICO and using criteria to select an information resource, additional interventions need to be incorporated into the classroom to improve students' abilities.

Interprofessional Patient Error Disclosure Training Simulation for Dental Medicine, Nursing and Pharmacy Students. Therese I. Poirier, *Southern Illinois University Edwardsville*, Katie E. Ronald, *Southern Illinois University Edwardsville*, Miranda J. Wilhelm, *Southern Illinois University Edwardsville*, Ann Popkess, *Southern Illinois University Edwardsville*, Toni Roucka, *Southern Illinois University Edwardsville*, Chris Durbin, *Southern Illinois University Edwardsville*. **Objectives:** To describe and evaluate an interprofessional event including dental medicine, nursing, and pharmacy students in a training simulation to teach how to approach medical error disclosure. **Method:** Students from three health professions programs were required to review a video and content materials on error disclosure prior to the simulation. Students were organized into interprofessional teams for the simulation. A total of 48 interprofessional teams consisting of 4 to 5 members were assembled. The role of standardized family member was played by students from the theatre department. Health profession students participated in three disclosure simulations consisting of a neutral, sad but cooperative and an angry, hostile affect. The simulation experience required 2 ½ hours of student time. Assessments consisted of a 10 item pre and post simulation knowledge and 15 item attitude surveys. A post simulation evaluation was also administered. **Results:** A total of 202 students participated in the simulation training including 49 third year dental, 74 senior nursing, and 79 third year pharmacy students. The knowledge assessment indicated a significant improvement ($p < 0.05$) after completion of the simulation for all health disciplines. A significant improvement in attitudes ($p < 0.05$) about error disclosure was also demonstrated after the simulation. Dental students were less likely than pharmacy and nursing students to be positive about the simulation. **Implications:** The training simulation was perceived by the students as one of the more effective IPE events to develop teamwork skills. Designing patient cases which are applicable to all professions involved is crucial for positive students' perceptions.

Interprofessional Poverty Simulation: Engendering Empathy and Raising Awareness of Social Determinants of Health. Veronica S. Young, *The University of Texas at Austin*. **Objectives:** The health of individuals and communities is affected by complex circumstances. Poverty is a known social determinant of health adversely impacting morbidity, mortality and access to care. The rate of poverty in our city (19%) and county (16.7%) exceeds the national rate (14.8%). Approximately 80% of households surveyed had to choose between paying for food versus medicine/medical care at least once in the past 12 months. Preparing students to address poverty's impact on health requires an interprofessional approach. The objective of this pilot simulation aims to engender empathy and foster interprofessional communication between student and community to address disparity. **Method:** A poverty simulation was intentionally designed to encourage interprofessional participation from the university and community. Baseline survey assessed participants' profession, reasons for attending, and level of community engagement. A post-survey assessed participants' experience and key takeaways. Quantitative data were analyzed using Excel, and qualitative data were coded and categorized into themes. **Results:** Participation was diverse with members from nursing, social work, pharmacy, public health, dental, communication, undergraduate programs, middle/high schools, and community agencies. Most reported working with the underserved occasionally. Top participation reasons included preparing to work with the underserved, interest in community engagement, and desire to collaborate interprofessionally. Post-evaluation revealed high ratings. Key takeaways highlighted deepening empathy for those living in poverty and increased awareness of social determinants of health. **Implications:** An

intentionally designed poverty simulation with a well-planned debriefing can successfully foster interprofessional communication, engender empathy, and raise awareness of disparity that extends beyond traditional learning environments.

Is Grittiness Associated with Academic Performance of Student Pharmacists? Kristopher Harrell, *The University of Mississippi*, David J. Caldwell, *The University of Louisiana at Monroe*, Adam Pate, *The University of Louisiana at Monroe*, Kristen A. Pate, *The University of Louisiana at Monroe*, Nalin Payakachat, Amy M. Franks, *University of Arkansas for Medical Sciences*. **Objectives:** To describe grittiness of students from three pharmacy schools and determine if grit is associated with demographic and/or other academic performance measures. **Method:** Upon institutional review board approval at each respective university, UAMS College of Pharmacy, University of Louisiana at Monroe School of Pharmacy, and the University of Mississippi School of Pharmacy students were invited to anonymously participate by completing a self-administered electronic questionnaire. The questionnaire included items from the Short Grit Scale, demographic information, and academic factors (pharmacy GPA, highest composite PCAT score, history of earning a D or F in a pharmacy course, and others). The Grit score ranges from 1 (lowest grittiness) to 5 (highest grittiness). Associations between grit and other measures were determined using logistic regression. **Results:** 724 of 1314 (55%) students responded. The majority were female and white. The average grit score was 3.7 (SD=0.5). There was no difference on grit scores among the three sites. Grit was found to be a strong predictor for students being in the highest GPA group (>3.49) when compared to the lowest GPA group (<3.0), controlling for age, PCAT, gender, and race (RRR 2.9, 95% CI 1.78-4.70). There was no significant difference in grit score between students who had ever earned a D or F (n=105) and those who had not (n=615). **Implications:** Results from this research imply that grittiness may be associated with student pharmacist academic performance. Additionally, using the Grit Scale may help identify at-risk individuals for early academic intervention programs.

Is Perception Reality? Comparing Wellness Habits Using Biometrics in Pharmacy Students. Eric C. Nemecek, *Western New England University*, Michael C. Thomas, *Western New England University*, Melissa Mattison, *Western New England University*. **Objectives:** The intent was to characterize and compare wellness perceptions to biometrically obtained activity in pharmacy students. **Method:** Interested second-year pharmacy students completed a 10-question survey about wellness habits. Participants were provided with a Fitbit Charge device that collected biometric data in near-real time and were compiled using a third party database. Activity levels are automatically categorized into very active, fairly active, lightly active, and sedentary and sleep hours are tracked nightly. **Results:** Sixty-three second year pharmacy students enrolled in the study, 61 (68.9% female) completed both the survey and wore the tracking device for two weeks. The wellness survey showed moderate was the most common level of physical activity (54%) followed by combined [moderate and vigorous] (38%) and vigorous (8%). The most common self-reported sleep habits were 7-9 hours (39.3%) and 6.5-7 or 9-10 hours (36.1%). Participants who reported either moderate or vigorous activity as their primary activity level showed no significant difference between measured activity. Participants who reported a combination of activity significantly under estimated their weekly activity level (185.3 minutes vs. 446.5 minutes; $p < 0.01$). Students who reported sleeping an optimal amount (7-9 hours) slept on average 7.3 hours per night; whereas participants who reported they slept outside the desired

range slept an average of 7.2 hours per night ($p = 0.77$). **Implications:** Pharmacy students were fairly accurate in predicting their wellness activities; however, students were not able to accurately describe their sleep habits.

Lobowings: A Pilot Study of Interprofessional Patient Safety Training. Kristina M. Wittstrom, *The University of New Mexico*, Mark T Holdsworth, *UNM*. **Objectives:** Evaluate the effectiveness of an interprofessional active learning exercise promoting patient safety through teamwork and collaboration among healthcare students. **Method:** A half-day Crew Resource Management (CRM) team-training activity adapted from a hospital staff development program involved 250 students (medicine, nursing, pharmacy) about to begin clinical experiences. Following presentations and discussion about CRM, small groups of students collaboratively worked case studies to practice responding to patient safety challenges through effective communication and collaborative teamwork. Pre and post surveys evaluated attitudinal changes towards interprofessional teamwork and individual confidence in effective communication of identified safety issues. **Results:** Analysis of the attitudinal survey showed statistically significant improvement for all participants on all survey items. The largest effect size was seen in participants' self-identified ability to recognize patient safety issues and the confidence to appropriately intervene within an interprofessional setting. **Implications:** A short interprofessional activity can foster awareness of individual responsibility in identifying patient safety issues and enhance confidence in communicating these issues to others in the healthcare team. A follow-up survey will provide longitudinal data on the effectiveness of the training.

Non-Patient Care Elective Course Offerings by US Schools/Colleges of Pharmacy. Simi Gunaseelan, *The University of Texas at Tyler*, Mohammed A. Islam, *West Coast University*, Rahmat M. Talukder, *The University of Texas at Tyler*. **Objectives:** The Accreditation Council for Pharmacy Education (ACPE) 2016 Standards emphasizes on non-patient care elective pharmacy practice experiences. The aim of this study is to assess non-patient care elective courses in didactic and in advanced pharmacy practice experiences (APPEs) offered by US schools/colleges of pharmacy. **Method:** The websites of 132 schools/colleges of pharmacy were visited during December 2015-January 2016. Pertinent information on non-patient care didactic and APPEs elective courses were extracted and analyzed. **Results:** Out of 132 schools/colleges of pharmacy, information on non-patient care didactic and experiential elective courses from 67 and 31 programs, respectively were obtained. Non-patient care didactic elective courses constitute 62% (n=622) of total listed didactic elective courses (n=1006). Among the non-patient care didactic electives, the predominant courses include pharmaceutical science courses (17%), research (13%), pharmacy/health system management (7%), pharmacy leadership (4.8%), nuclear pharmacy (4%) and academic pharmacy (3.2%). Courses offered on other specialized areas include health outcomes (3%), pharmacy entrepreneurship (2.4%), compounding (2.4%) and poison control (0.5%). The course credit hours vary between 1 to 3 credits. Out of 205 non-patient care elective APPEs, predominant electives include pharmacy administration/management (19%), research (11%), nuclear pharmacy (9%), pharmacy professional organization (7%), academic pharmacy (6.8%) and industry (6%). **Implications:** Opportunities exist to expand both the didactic and experiential electives in areas suggested by ACPE Standards 2016 such as pharmaceutical industry, pharmacy associations, boards of pharmacy, drug information, poison control, and federal and state regulators etc. Our study may be a useful guide for pharmacy schools/colleges or other institutions to develop new elective courses.

Novel Cultural Competency Activities Integrated Across Curricular Departments and Courses

Elizabeth A. Buckley, *Concordia University Wisconsin*, Christian B. Albano, *Concordia University Wisconsin*, Loren Williams, *Concordia University Wisconsin*. **Objectives:** Introduce and reinforce cultural awareness via exploration, implementation, and evaluation of available resources and creation of a useable cultural family profile. Integrate material across Pharmacy Practice and Social/Administrative Sciences departments. Utilize technology and scientific literature to create resources for continual use, and foster familiarity, consistency, and empathy for other cultures. **Method:** A series of exercises were designed surrounding two first-semester P1 courses addressing cultural competency. The first team-based activity involved searching for cultural resources online, followed by online group discussion on the utility, validity, and reliability of the information to create a resource document for future use. Using their resources, groups created cultural family profiles, which were integrated within cultural awareness activities in each course. A survey was administered at different points throughout the semester to determine the frequency of utilization of the resources to prepare for course activities. At the end of the semester, students completed a final paper that included the profiles, and a final survey was administered to assess the student's perceptions and beliefs. **Results:** Three years of survey data show high levels of student engagement with the assignment, and increased awareness and understanding of the effect of cultural attributes on patient care. Over 90% of students reported continual utilization of the tools created in the social science course throughout both semesters of the practice course. **Implications:** This cultural competency activity enhances learning across courses, gives the students a valuable and reliable tool for use in subsequent courses and clinical rotations, and is promising as a continued teaching method.

Nutritional Education Offered by Pharmacy Schools in the United States.

Justin B. Lim, *N/A*, Alexander Lo, *Rutgers, the State University of New Jersey*, Steven Caproni, *Rutgers, the State University of New Jersey*, Ashley Ward, *Rutgers, the State University of New Jersey*, David Fett, *Rutgers, the State University of New Jersey*, Donna M. Feudo, *Rutgers, The State University of New Jersey*, Michael Toscani.

Objectives: A need for training in nutrition has been noted in pharmacy school curricula, but data is lacking regarding current nutrition education offerings. This study aimed to collect information about nutrition coursework offered at U.S. pharmacy schools and to measure the attitudes of pharmacy school administrators regarding the value of nutritional training in helping pharmacy professionals improve the care of their patients. **Method:** An anonymous survey was sent to the Deans of Assessment or their equivalents at 135 candidate or accredited U.S. pharmacy schools. The survey asked responders about the nutrition courses offered to students by their pharmacy school, the value of pharmacist training in nutrition for disease prevention, treatment, and management along with the utilization of the APhA Certificate Training Programs in their designated curriculums. **Results:** The survey was open for one month and collected 34 responses for a response rate of 25.2% (n=135). Of the responses, 13/34 (37.1%) pharmacy schools do not offer any nutrition courses, while 11/34 (32.4%) offer 3 or more nutrition courses. It is also the belief of 19/34 (55.9%) administrators that pharmacist training in nutrition is inadequate (mean 2.32, $p > 0.05$). APhA Certificate Training Programs offered by schools are focused in MTM or Immunization (73.5%). **Implications:** Overall, the results suggest that pharmacist training in nutrition and the amount of nutrition courses offered to pharmacy students are valued but vary in scope and offerings. More research is needed to quantify the need and value of these nutritional training programs in pharmacy schools and their impact on patient care.

Outcomes of Student-driven, Faculty-mentored Research and Impact on Postgraduate Training and Career Selection.

Kelsey M. Woods, *N/A*, Kyle W Osborne, *South Carolina College of Pharmacy*, Whitney Maxwell, *South Carolina College of Pharmacy*, Karen McGee, *South Carolina College of Pharmacy*, P. Brandon Bookstaver, *South Carolina College of Pharmacy*. **Objectives:** This study describes and quantifies the impact of student-driven, faculty-mentored independent research on career path and postgraduate training. **Method:** This retrospective study included professional program graduates from the University of South Carolina College of Pharmacy/South Carolina College of Pharmacy between 2002 and 2015. Data were collected from enrollment records, faculty CVs, online conference proceedings, public records, PubMed/Google Scholar, and databases retrieved from national pharmacy organizations. The primary outcomes were the rate of successful abstract submissions and manuscript publications. Secondary outcomes included the impact of student research on postgraduate training placement rates, attainment of research-focused careers (e.g. academic appointments), and postgraduate publication rates. Logistic regressions were used to determine the predictors of secondary outcomes. **Results:** Of 1,229 students included in the study, 300 (24.4%) attempted independent research. Of those engaged in independent research, 167 students submitted at least one abstract and 68 went on to publish their independent research. More than 18% (n=223) of graduates completed some form of post-graduate training and 31 graduates have taken an academic position. Approximately 10% (n=117) of graduates have published at least one peer-reviewed publication resulting in 417 publications. Students engaged in independent research projects were more likely to achieve postgraduate training (aOR=9.3; 95% CI 5.08-17.03), specialty training (aOR=6.2; 95% CI 2.45-15.34), and an academic faculty appointment (aOR=4.0; 95% CI 1.19-13.42). Postgraduate publication was influenced by additional training and academic appointment. **Implications:** Students benefited from engaging in independent research as evidenced by their propensity for post-graduate training and research-oriented careers.

Pain Medications: Application of Pharmaceutical Science Concepts to Patient Cases in Therapeutics.

Debra K. Farver, *South Dakota State University*, John Kappes, *South Dakota State University College of Pharmacy*, William Hayes, *South Dakota State University College of Pharmacy*, Wenfeng An, *South Dakota State University College of Pharmacy*, Joshua Reineke, *South Dakota State University College of Pharmacy*, Omathanu P. Perumal, *South Dakota State University*. **Objectives:** Interdepartmental active learning activity to review and apply pharmacogenomics and pharmacokinetic concepts of opioids to enhance student knowledge. **Method:** Pharmaceutical Science and Pharmacy Practice faculty jointly developed a unique interdepartmental teaching project for the third year (P3) PharmD students. During Therapeutics class, Pharmaceutical Science faculty reviewed concepts of pharmacogenomics and pharmacokinetics of opioids previously taught in the first two years of the professional program. P3 students, in small groups, applied the information to patient cases and selected appropriate opioids for adequate pain relief while minimizing adverse effects. Assessment of knowledge was done with a 10 point (5 questions) multiple choice pre and post activity quiz. A student survey was completed by all students following the post activity quiz. **Results:** Average pre-quiz score for the 73 P3 students was 39.7% while the post-activity score was 83.5%. Students agreed or strongly agreed the review of opioid pharmacogenomics and pharmacokinetics was helpful when solving the drug related problem in the patient cases (64.4%), applying the information of the pharmacogenomics and pharmacokinetics concerning opioids was

necessary in solving the drug related problem in the patient cases (90%) and they recognized the need to understand concepts within the pharmaceutical sciences to apply in the clinical setting (90%). **Implications:** Faculty experts collaborating in the classroom throughout the curriculum can enhance the student experience and improve knowledge when solving drug related problems.

Patient Case Video Vignettes to Teach Cross-Cultural Communication Skills in a Health Care Communications Course. Sally Arif, *Midwestern University*, Jennifer L. Mazan, *Midwestern University*, Brian Cryder, *Midwestern University*, Ana C. Quinones-Boex, *Midwestern University*, Angelika Cyganska, *Midwestern University Chicago College of Pharmacy*, Mizanur Miah, *Midwestern University Chicago College of Pharmacy*, Ravina Gandhakwala, *Midwestern University Chicago College of Pharmacy*. **Objectives:** To assess if simulated patient case videos, incorporated into a workshop, improve students' understanding of and attitudes towards cross-cultural communication in health care. **Method:** Third year pharmacy students were asked to complete a competency and attitudes based questionnaire before and after attending a one-hour lecture and mandatory 2 hour workshop about cross-cultural communication. Three simulated pharmacist-patient case vignettes were created to highlight cross-cultural communication barriers, the role of active listening, appropriate use of medical interpreters, and models that can be used to overcome communication barriers. The videos were shown and discussed with groups of 20 students during the workshop. **Results:** There was a significant increase in students' understanding of cross-cultural communication concepts (mean pre-test score=5.5 vs mean post-test score=6.6, $p<0.05$). The students' mean comfort level with providing cross-cultural care significantly increased after the workshop ($p<0.002$). Regardless of ethnicity or background of the student, the workshop improved knowledge and attitude towards cross-cultural communication. Eighty eight percent of students felt that the PharmD curriculum should contain more cultural competency training in regards to communication skills. **Implications:** Incorporation of simulated patient case videos improved pharmacy students' understanding of cross-cultural communication skills and can be used to improve cultural competency skills.

Peer Teaching: Clinical Skills Training for Pharmacy Students (OSCE-PAL). Jaclyn Cole, *University of South Florida*, Melissa Ruble, *University of South Florida*, John Donnelly, *University of South Florida College of Pharmacy*, Benjamin Groves, *University of South Florida College of Pharmacy*. **Objectives:** To assess the impact of peer-teaching in clinical skill training for a final objective structured clinical examination (OSCE) within a Doctor of Pharmacy program. **Method:** First year pharmacy students were provided with the opportunity for peer-led training provided by second, third, and fourth year pharmacy students on clinical skills to be assessed in a final OSCE. The 6 clinical skills utilized during the OSCE included otic medication administration, dry powder inhalation (DPI) technique, suppository administration technique, manual blood pressure reading technique, glucometer testing, and insulin injection using a vial and syringe. Attendees' grades were collected and compared to those who did not attend the optional training. Confidence scores were evaluated using a pre- and post-survey, which also provided the opportunity for free response feedback regarding their experience during the training. **Results:** The mean final OSCE grades were 3% higher ($p=0.049$) for peer-teaching attendees. Student-reported mean confidence scores increased for all clinical skills evaluated by 1.05 points on the 5-point scale ($p<0.001$). There was also a statistically significant reported increase in confidence for each individual clinical skill, with

the exception of manual blood pressure reading. Free response feedback indicated ways to improve this program in the future. **Implications:** Peer-teaching was associated with enhanced student performance and confidence in the final OSCE. Results from this study suggest that peer taught programs may be an additional method for improvement in student competency and confidence of clinical skills within pharmacy education.

Perceptions of Readiness and Impact of a Capstone in Pharmacy Course. Michelle R. Musser, *Ohio Northern University*. **Objectives:** Capstone courses provide an opportunity to ensure readiness for advanced pharmacy practice experiences (APPE). However, course evaluation processes often do not assess readiness or if course activities build confidence in practice-ready skills. Moreover, delayed impact of a course is rarely assessed. Fifth year pharmacy students (in a 0-6 program) evaluated the impact of a capstone course on readiness for practice and rotations, both during the course and on APPE. **Method:** Students completed Likert scale-based surveys to assess the perceptions of the capstone course, including readiness, confidence, and course value. Surveys also included open-response questions for qualitative feedback. Students completed surveys at the beginning and end of the capstone course and during rotations in the year following the course. **Results:** There was significant improvement in students' perceived preparedness for APPE ($p<0.01$) and practice ($p<0.01$) following the course. Students also had significantly improved confidence in performing several practical tasks (all comparisons $p<0.01$) after the course. However, students had significantly reduced ratings regarding value of the course ($p<0.01$) at the end of the course, although the majority of students "agreed" or "strongly agreed" the course was valuable; this trend was consistent when comparing posttest and APPE survey results. **Implications:** Student perceptions regarding a capstone course revealed improved readiness for advanced experiences and confidence in practical abilities following the course. However, this was coupled with a lack of appreciation for the value of the course. Additional efforts should be directed at connecting course value with achieved improvements in readiness, confidence, and abilities.

Performance and Retention of Basic Life Support Skills Post-implementation of Peer-led Training and Certification Program. Dorela Priftanji, *Philadelphia College of Pharmacy, University of the Sciences*, Michael J. Cawley, *Philadelphia College of Pharmacy, University of the Sciences*, Laura Finn, *Philadelphia College of Pharmacy, University of the Sciences*, James M. Hollands, *Philadelphia College of Pharmacy, University of the Sciences*, Diane W. Morel, *Philadelphia College of Pharmacy, University of the Sciences*, Angela L. Bingham, *Philadelphia College of Pharmacy, University of the Sciences*. **Objectives:** To assess pharmacy students' ability to perform and retain Basic Life Support for Healthcare Providers (BLS) skills within 120 days of a peer-led BLS training and certification program. **Method:** Third professional year PharmD students who completed BLS certification through the peer-led program 120 days prior to simulation were randomly assigned to rapid response teams of 5-6 members for high-fidelity mannequin simulation ($n=148$). BLS skill performance was evaluated using the American Heart Association's standardized form for BLS assessment and was compared to our previously published simulation data from 2013, prior to implementation of the peer-led BLS program. **Results:** Teams with peer-led BLS training and certification ($n=24$) demonstrated retention of BLS skills within 120 days and significant improvement of evaluated skills as compared to teams prior to implementation ($n=22$): specifically, assessed for responsiveness (96% vs 41%, $p<0.0001$), assessed

for breathing (100% vs 32%, $p < 0.0001$), evaluated pulse (96% vs 36%, $p < 0.0001$), and administered appropriate ventilation (100% vs 32%, $p < 0.0001$). Numerical superiority was demonstrated for initiation of high-quality CPR by teams with peer-led training and certification (100% vs 86%, $p = 0.1014$). **Implications:** Teams with peer-led BLS training and certification demonstrated BLS skill retention within 120 days of training. Skill performance was significantly improved following implementation of the peer-led BLS program. Quantitative data suggests that peer-led BLS training has a positive impact on skill performance and retention.

Personnel Training and Patient Education in Medical Marijuana Dispensaries in Oregon. Roberto W. Linares, *Oregon State University*, Ann Zweber, *Oregon State University*. **Objectives:** Determine the knowledge and training of Oregon Medical Marijuana Dispensary (OMMD) personnel and describe the information and type of advice provided to patients who utilize Oregon dispensaries. **Method:** State-wide cross-sectional email survey of OMMD personnel. **Results:** Of the 141 surveys, 47 were initiated. The most frequently referenced types of training were on-the-job training and the internet. Dispensary personnel most commonly used patients' preferences and symptoms, and personal experiences to determine appropriate strains for patients. The majority of respondents advised patients about precautions and expected effects. Respondents were least likely to advise on drug interactions, or recommend a patient talk to a pharmacist or prescriber. **Implications:** Dispensary personnel in Oregon use a variety of resources to learn about medical marijuana. Although formal health or medical training was not indicated, personnel advise on marijuana's effects, use, and product selection. Further study is needed to assess the current training and advising on patients' ability to use medical marijuana safely and effectively.

Perspectives of Pharmacy and Medical Students Before and After Participation in an Interprofessional Education Activity. Megan Brown, *Purdue University*, Amy H. Sheehan, *Purdue University*, Adam Smith, Julianne Stout, *Indiana University School of Medicine*. **Objectives:** Interprofessional education is an important addition to the ACPE 2016 Standards. The objective of this project is to describe perspectives of pharmacy and medical students before and after collaboration during a cocurricular patient case activity. **Method:** A sample of 16 third-year students from the Purdue University College of Pharmacy (PUCOP) and 13 second-year students from the Indiana University School of Medicine – West Lafayette (IUSM-WL) students was identified to participate in an interprofessional patient case conference, sponsored by the PUCOP Academy of Student Pharmacists. Participants were randomly assigned to teams of 6 students (3 from each discipline) and charged with presenting a comprehensive treatment plan for a patient case. Faculty judges awarded recognition for the best presentation. All participants were invited to complete an electronic survey instrument before and after the activity to collect data regarding teamwork and collaboration, negative and positive professional identity, and roles and responsibilities. **Results:** The response rate was 93% (27/29) with 14 pharmacy and 13 medical students completing the survey. At baseline, 72% (21/29) had never participated in IPE. More pharmacy students agreed with items in the teamwork and collaboration (93.7% vs. 74.4%) and positive professional identity (91.07% vs. 59.13%) subscales, whereas more medical students identified with items related to negative professional identity (12.8% vs. 4.8%) and roles and responsibilities (33.3% vs. 21.5%). **Implications:** These results provide insight regarding student perceptions of interprofessional collaboration and may serve as a model for integrating student organizations and maximizing resources through cross-institutional opportunities.

Pharm.D. Students' Opinions on Peer Mentoring. Nicole J. Asal, *The University of Rhode Island*, Rachel Morgans. **Objectives:** To evaluate differences in opinions of previous faculty-mentored classes (P3 class and P4 class) compared to those with a peer mentor (the current P1 class and P2 class). **Method:** To evaluate current pilot program, a 16-question survey was administered to all URI pharmacy students during the Fall of 2014. Surveys were administered electronically to all professional pharmacy students. The responses evaluated demographics, students' level of professional involvement, and students' attitudes towards their mentoring experiences. Once the results were collected, information was stratified based on the students' mentoring program during their P1 year. The class of 2015 and 2016 (P4 and P3, respectively) only experienced a formal faculty-to-student mentoring program and their cumulative responses are compared to the classes of 2017 and 2018 (P2 and P1, respectively), those with the peer-to-peer student mentoring program. Descriptive statistics were used to compare students' opinions on confidence, preparedness, time management skills, and level of support provided by faculty and peer mentors in the beginning of their first professional year. **Results:** Over all students with peer mentoring component in addition to the prior established faculty mentoring program felt more prepared starting their P1 year, were more realistic about the time commitment required, felt more comfortable reaching out to their faculty mentor for advice, and experienced more encounters with their own faculty mentors. **Implications:** PharmD students had positive opinion towards novel peer mentoring program. Areas for improvement: anxiety lowering strategies, creating more opportunities to meet peer mentors, and improving school-life balance.

PharmD Student Perceptions of Personal Competence with CAPE Outcomes. Darla Zarley, *Roseman University of Health Sciences*, Catherine Oswald, *Roseman University of Health Sciences*, Erin L. Johanson, *Roseman University of Health Sciences*. **Objectives:** The goal of this study was to measure students' self-perception of their competency level of the educational CAPE outcomes as they matriculate through the Doctor of Pharmacy curriculum. **Method:** An anonymous survey was administered to P1, P2 and P3 classes on two campuses of a fully accredited College of Pharmacy at the end of the 2015 academic year to evaluate the student's self-perception of how their competence in regards to CAPE 2013 Outcomes. **Results:** P1 students ranked themselves as more competent overall with Domain 3 (Approach to Practice and Care) and Domain 4 (Personal and Professional Development); whereas, the P2 and P3 students ranked themselves as more competent with Domain 1 (Foundational Knowledge) and Domain 2 (Essentials for Practice and Care). Intercampus variability showed that P1, P2 and P3 students from the newer campus felt less competent on all 4 Domains in comparison to the P1, P2 and P3 students from the founding campus. **Implications:** This survey illustrates as students matriculate through the program, they feel more competent with their knowledge, skills, and abilities to provide evidence-based patient-centered care, but feel less competent with regards to interprofessional collaboration with other healthcare providers, cultural sensitivity, and personal and professional development. Future analysis needs to be done in order to identify the intercampus variability and address student-identified lack of competence with CAPE domains through potential didactic and experiential curricular interventions.

Pharmacist-led Home-based Comprehensive Medication Reviews for Medicaid-eligible Adults > 50 years of Age. Shara Elrod, *University of North Texas System*, Stephanie Large, *University of North Texas Health Science Center*. **Objectives:** Mighty Care is an interprofessional healthcare team, which provides primary care to Medicaid-eligible

adults > 50 years of age. The team includes a physician, nurse practitioners, nurses, and a pharmacist (0.4FTE). The pharmacist met with patients to conduct comprehensive medication reviews (CMRs), primarily in the home and occasionally in clinic. A collaborative medication management protocol was established with the medical director. The objective of this pilot study was to describe pharmacist-led home-based CMRs. **Method:** The pharmacist documented all CMRs and drug therapy problems (DTPs) in the electronic health record (EHR). DTPs were coded based on commonly accepted definitions and were individually coded by a pharmacist and a nurse practitioner trained in DTP identification. All DTPs of the same category for the same patient were collapsed into one DTP (e.g. adherence). Discrepancies were resolved through consensus. Descriptive statistics were used to evaluate pilot data. **Results:** Fifty-six home visits were conducted. The median age was 65 (range 51-81). Patients were on a mean of 15.6 medications (range 7-28). The pharmacist identified a mean of 2.4 DTPs with the most common being adherence (57.9%). The most common reason for adherence was due to lack of understanding. **Implications:** This project supports the value of a pharmacist providing home-based CMRs. Home visits provide unique information difficult to assess in a clinic environment (e.g. medication management, storage). This pilot study also demonstrates the need for targeted interventions directed at adherence, as more than half of patients were not adherent because they did not understand their drug therapy.

Pharmacists' Interventions in Improving Clinical and Patient Outcomes: An Ambulatory Care Pharmacy Practice Approach.

MokThoong Chong, *American University of Health Sciences*. **Objectives:** To evaluate the impact of pharmacists' interventions on clinical and patient outcomes through an Ambulatory Care Pharmacy Practice in an under-represented minority population. **Method:** Eligible patients were enrolled through direct primary care provider referrals in the clinic. The pharmacists reviewed vital signs, laboratory values and medication taking by the patients. Counseling and education were provided to patients on the proper and safe use of medication. Interventions recommended by the pharmacists might include to initiate, to adjust, to modify and to discontinue drug therapy; and also to order laboratory results and drug concentration levels. Follow-up visits were scheduled until treatment goals were met. Data collected from electronic medical records system were assessed and analyzed. **Results:** Forty-seven patients with various chronic diseases and taking multiple medication were seen by the pharmacists at least twice in the study. With recommended interventions from the pharmacists, sixty-four percent (64%) of the participating patients were able to achieve targeted treatment goals from the baselines within six months. Patients with type II diabetes seemed to be the least adherence to the treatment plans. It also revealed that cardiovascular, endocrine and pulmonary disorders were the most common medical conditions seen. **Implications:** The study showed that pharmacists play an important role in providing direct patient care to improve clinical and patient outcomes. This pharmacy practice helps to promote patient safety, reduce health-care cost and improve quality of life in patients.

Pharmacist's Role in a Dental Clinic: Establishing an Interprofessional Education Site.

Kalin L. Johnson, *Creighton University*, John Shaner, *Creighton University School of Dentistry*, Kimberley J. Begley, *Creighton University*, Karen O'Brien, *Creighton University*, Shana Castillo, *Creighton University*, Brittany Stevens, *Creighton University*. **Objectives:** Interprofessional education brings together various professional groups to promote collaborative practice and improve the health care of patients. The relationship between pharmacists and dentists is frequently not well developed. Pharmacists have

opportunities to intervene in patient care and augment dental students' understanding of a patients' pharmacologic therapies. An interprofessional education program with a pharmacist providing medication therapy management services in a dental school clinic was developed and implemented. The impact of the pharmacist's role on patient outcomes was assessed. **Method:** As part of the dental school's curriculum, approximately 172 third and fourth year dental students see patients in clinic. The Creighton University dental clinic on average sees 11,000 patients per year. From August, 2014 through July, 2015, the pharmacist worked with patients, dental students, and dentists to identify, resolve, and prevent drug-related problems. The pharmacist kept records via a descriptive checklist to substantiate interventions for data analysis purposes. **Results:** The data showed that the pharmacist intervened on 193 adverse reaction/drug interaction cases, 8 drug selection problems, 6 medication dosing problems and 88 patient related problems. Dental students were assisted with 414 medication histories, and attending dentists or physicians accepted 17 pharmacist-generated medication recommendations. **Implications:** The pharmacist's presence in the dental clinic was largely accepted by dentists, dental students, and patients. Pharmacists may positively impact patient outcomes by conducting thorough health and medication histories, and by communicating with both dental and medical providers involved in a patient's care.

Pharmacy Student Perceptions of Utilizing an Electronic Medical Record in the Laboratory Setting.

Kimberly G. Elder, *Sullivan University*. **Objectives:** To examine the change in student perceptions of an electronic medical record (EMR) in the patient care laboratory. **Method:** Students traditionally formulated SOAP notes and completed activities after viewing subjective and objective information using a paper-based format. The Cerner educational EMR was used to present a diabetes case. Navigation through sections of the EMR to find pertinent information, create a SOAP note, and complete an activity was required. Seventy-three students were asked six pre- and post-questions and four additional questions after the session. **Results:** Survey response was 87.67% (pre-survey) and 71.23% (post-survey). Students' confidence using EMRs statistically significantly improved following the session ($p < 0.001$). They increased their belief that using the EMR to practice cases would prepare them for experiential rotations ($p = 0.042$). Students' comfort level using an EMR to gather subjective/objective information to treat a diabetic patient ($p < 0.001$) and comfort designing a treatment plan for such patients ($p < 0.001$) also improved. There was no difference in perceptions that an EMR would prepare students for their pharmacist career or that the level of technological skill to use an EMR was intimidating. Most students (88.46%) either strongly agreed or agreed the EMR was a fun way to learn. Additionally, 84.61% strongly agreed or agreed the EMR enhanced their understanding of inpatient and outpatient diabetes. Most students thought the EMR was a realistic and preferable way to learn compared to paper-based cases. **Implications:** Students' confidence and comfort level improved by adding EMR activities into the laboratory. This allowed students to get a more realistic taste of pharmacy practice.

Pilot-project on Longitudinal, Interprofessional Home Visits with Type 2 Diabetic Patients.

Debra K. Farver, *South Dakota State University*, Lori Hansen, *Sanford School of Medicine University of South Dakota*, James R. Clem, *South Dakota State University*, Dennis D. Hedge, *South Dakota State University*, Ramu Sudhagoni, *University of South Dakota Public Health*. **Objectives:** Longitudinally, diabetic patient care can improve through interprofessional interventions in the home setting with medical and pharmacy students. **Method:** Fourteen

3rd year medical and 4th year pharmacy students were paired to complete home visits with Type 2 diabetic patients who's A1Cs were greater than 8%. Over 9 months, six home visits per patient were completed. Students used the alphabet strategy when providing diabetes education. Home visits used point-of-care testing for A1C and cholesterol along with assessing blood pressure, sensory foot exam, and physical exam. A review of medications, vaccines and appointments were completed. The results of the seven patients in the home visit study were compared to matched controls. Other assessment was a pre and post home visit knowledge exam and student perception surveys. **Results:** BMI reduction was found to be statistically significant ($P=0.0261$). Reductions in A1C, LDL, triglycerides, and blood pressure were not statistically significant. Pre-home visit knowledge exam average was 71.3% while post exam average was 86.3% for pharmacy students. All medical and pharmacy students strongly agreed or agreed that the activity enhanced understanding of patient care in the home, was valuable to their education, increased their competency to formulate, implement and revise a patient-centered care plan, and skills were learned to apply in the future care of diabetic patients. **Implications:** Interprofessional student home visits had some positive impact on patient care. Knowledge and perceptions of home visits improved with pharmacy students. A long term study in this population is warranted to assess for other benefits.

Piloting an Interactive, Interprofessional Error Disclosure Simulation. Kathryn K. Neill, *University of Arkansas for Medical Sciences*, Cora L. Housley, *University of Arkansas for Medical Sciences*. **Objectives:** To describe the design and evaluate the delivery of an interprofessional error disclosure simulation. **Method:** An interprofessional simulation was designed to immerse students in the Triple Aim and concepts of interprofessional education (IPE) through collaboration in responding to disclosure of a medical error. Interprofessional student teams were able collaborate/plan before interacting with standardized patient family members. Teams regrouped for debriefing and completed individual post-activity evaluations consisting of self-assessments of the learner's perceptions of IPE and error disclosure and an evaluation of the simulation itself on a 5-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). Students also evaluated patient/family-centered care skills. Open-response questions regarding application of the concepts learned were included. **Results:** 66 students (representing all six colleges on campus) participated and completed the post-activity evaluation. Average scores for IPE and error disclosure items were 4.31 and 4.38, respectively. Learners rated the activity at an average of 4.3 for facilitating professional development and the simulation at a 4.41 for being valuable. On average, students reported completing 6.33 out of the 8 patient/family-centered care items. Students stated the simulation demonstrated the interprofessional team improves patient/family interactions and gave them confidence in disclosing difficult situations. **Implications:** Students perceived the simulation was effective in immersing learners in concepts of the Triple Aim in IPE and developing skills necessary to communicate in difficult situations. Feedback from this pilot cohort provides insight into areas of improvement for future activity planning as the Triple Aim curriculum becomes a graduation requirement.

Practicing Interprofessional Phone Communication with Prescribers. Gina J. Ryan, *Mercer University*, Jill R Mattingly, *Mercer University College of Health Professions*, Niamh M Tunney, *Mercer University College of Health Professions*, Angela O. Shogbon, *Mercer University*. **Objectives:** Conflicting schedules and limited space often impede the development of interprofessional education

(IPE) activities. An activity that requires students to resolve patient-specific problems via phone communication could be an effective method for enhancing interprofessional communication skills, simulating clinical practices, and does not require a specific space or time. The goal of this project is to pilot an asynchronous IPE activity where students practice interprofessional communication skills using phone calls. **Method:** All students received a patient case with profession-specific information. Pharmacy students were instructed to call a physician assistant (PA) student to resolve case-based pharmacotherapy issues. Students were encouraged to utilize the situation, background, assessment and recommendation (SBAR) technique. Students evaluated each other using a rubric and also rated their SBAR communication techniques before and after completing this assignment. Faculty graded the recorded phone calls using standardized rubrics. **Results:** The average faculty ratings of students' skills in tone, word choice, and introduction were >3.4 on a 4-point scale. However, the average faculty rating of the students' skill of summarizing the phone call was 2.3. The students reported significant improvements in their before and after communication skills (77 vs 82, $p=0.0001$) and confidence (78 vs 82, $p=0.001$). **Implications:** Students provided useful feedback to their colleagues regarding appropriate introductions, word choices, voice tone, and summarizing the call. This activity significantly improved students in their confidence in calling prescribers.

Practitioners' Perspective on Assessment Activities to Determine Students' Readiness for Advanced Pharmacy Practice Experiences. Jane R. Mort, *South Dakota State University*, John Kappes, *South Dakota State University College of Pharmacy*, Shafiqur Rahman, *South Dakota State University*. **Objectives:** ACPE Standards 2016 encourages colleges to provide evidence of student achievement of 11 core ability domains needed to be "Advanced Pharmacy Practice Experiences ready" at the end of the didactic experience. This study sought practitioners' input on the most critical domains and the optimal assessment approaches. **Method:** Practitioners were invited to complete a survey asking them to rank the 11 ability domains from most critical to least critical. Participants were asked to select the best approach for assessing their top three most critical domains. **Results:** The vast majority of participants were preceptors (58 of 64) with 48.4% practicing 10 or more years, 50% working in a hospital, 27.4% in a community pharmacy, and 46.9% in communities with more than 100,000 people. The domains that were listed most often among the top three critical domains were patient safety (55 of 64 participants), drug-related problem management (30 of 64), medication information (28 of 64), basic patient assessment (23 of 64) and ethical, professional, and legal behavior (21 of 64). The most frequently recommended assessments for these critical domains included evaluation of knowledge of the top 200 most prescribed medications (24 of 28 participants rating medication information in their top three domains), identification of inappropriate medications based on patient information (36 of 55 ranking patient safety), and execution of medication reconciliation (12 of 23 ranking patient assessment). **Implications:** Knowledge of practitioners' perceptions regarding the most critical ability domains and optimal methods for assuring readiness can help focus assessment activities.

Predicting Factors to Recommend Preventive Aspirin in Chronic Kidney Disease (CKD) Patients. Huyen D Vu, *University of Maryland*, Magaly Rodriguez de Bittner, *University of Maryland*, Fadia Shaya, *University of Maryland*. **Objectives:** To investigate the characteristics of CKD patients stage 3 and above that were recommended by healthcare providers (HP) to take low dose aspirin (81 mg) for cardiovascular diseases prevention. **Method:** National Health and

Nutrition Examination Survey (NHANES) data (cohort 2011-2012) was used. The factors (gender, age of at least 65 years old, ethnicity, poverty rates, educational level, CKD stages, having hypertension and having diabetes) were investigated by utilizing multivariable logistic regression to determine the potential influencing predictors in decision making of HP in recommending at least stage 3 CKD (GFR <60/min/1.73 m²) patients to take 81 mg aspirin. **Results:** A total of 71,912 subjects met the criteria of having at least stage 3 CKD with available data for aspirin recommendation (36.08%). The results showed strong association for healthcare providers to recommend preventive aspirin in patients at least 65 years old ($p < 0.001$), above the poverty rate ($p = 0.0399$) and with the diagnoses of hypertension ($p < 0.001$) and diabetes ($p < 0.001$). **Implications:** Due to controversial recommendations across CKD guidelines, the use of preventive aspirin is inconsistent among HP. Currently, there is a lack of cardiovascular outcomes and safety data using aspirin in CKD, especially in elderly population with hypertension and diabetes. In this study, we concluded that these patients were more likely to receive recommendation for preventative aspirin. Thus, well design prospective randomization studies are needed in the future to determine the long term outcomes of aspirin therapy in this population.

Predictors of NAPLEX Performance in an Accelerated Program.

Kimberly K. Daugherty, *Sullivan University*, Yuan Zhao, *Sullivan University*, Misty M. Stutz, *Sullivan University*, Cindy D. Stowe, *Sullivan University*. **Objectives:** To determine student factors that correlate with NAPLEX performance **Method:** Data collected for class graduating in 2014: students' overall NAPLEX score, Pre-NAPLEX score, RxPrep Mock exam score, final course average in core pharmacy classes, age on admission, admit cumulative grade point average (cGPA), and admit math/science GPA. Data was compared individually using Pearson correlation and then using stepwise multiple linear regression to determine which data points were most predictive of a student's NAPLEX score. **Results:** 91 (93.8%) NAPLEX scores were available. Courses with positive significant correlation (p -values <0.01) were: PY1-Self Care ($r = 0.405$), Research Design/Literature Evaluation I ($r = 0.395$), and Pharmaceutical Calculations ($r = 0.413$) and P2-Pharmacology/Medicinal Chemistry ($r = 0.400$), Pharmacotherapeutics ($r = 0.505$), and Applied Lab sequences ($r = 0.519$), and Clinical Nutrition ($r = 0.416$). The combination of Acute and Ambulatory Care APPE grades ($r = 0.450$, $p < 0.01$) were found to positively and significantly correlate. Non-curricular items found to correlate: Positive correlation-RxPrep mock exam scores ($r = 0.698$, $p < 0.01$) and admit cGPA ($r = 0.250$, $p < 0.05$); negative correlation-age ($r = -0.286$, $p < 0.01$). The multiple regression model found that RxPrep mock exam scores, Applied Lab sequence average, Pre-NAPLEX scores, and admit cGPA were the strongest predictors of NAPLEX scores accounting for 53% of the variance in the NAPLEX scores ($R^2 = 0.534$, $p < 0.05$). **Implications:** This data helps identify students at risk for failure of the NAPLEX. This information will help guide curricular changes and develop student support services. Data will also be used to set minimum admission GPA requirements. PCAT and PCOA values will be added in future studies.

Prevalence and Characteristics of Pharmacies Owned and Operated by Schools of Pharmacy.

Joseph P. Nathan, *Long Island University*, Sara Grossman, *LIU Pharmacy*, Tina Zerilli, *Long Island University*, Adam C. Pace, *Belmont University*, Chava Davidovits, *LIU Pharmacy*, Sarah Ullman, *LIU Pharmacy*. **Objectives:** To identify schools of pharmacy (SOPs) that own and operate a pharmacy and to gather information about these pharmacies. **Method:** SOPs in the U.S. and Puerto Rico ($n = 134$) were called to determine

whether the school owns and operates a pharmacy that provides services to clients. An online questionnaire was sent to the schools identified to gather school and pharmacy demographics as well as information regarding the pharmacy's operation and services.

Results: Eighteen (13.4%) of the 134 SOPs reported owning and operating at least one pharmacy; of these, 14 (77.8%) responded to the questionnaire, with 8 (57.1%) owning/operating one pharmacy and 6 (42.9%) owning/operating 2 or more. A majority of the responding SOPs were public (64.3%), urban (78.6%) institutions not affiliated with an academic medical center (57.1%); 85.8% were the sole owners of the pharmacy/pharmacies. All SOPs reported the provision of educational opportunities for students as a goal for the pharmacy/pharmacies; the least commonly reported goal was generating revenue (57.1%). Administering vaccines, dispensing medications, providing clinic and medication therapy management (MTM) services, and selling over-the-counter products were commonly reported pharmacy services; 85.8%, 78.6%, and 50% of SOPs reported providing such services to students, faculty/staff, and community members, respectively. Thirteen (92.9%) reported that student pharmacists are regularly involved in pharmacy operations, with a majority reporting student involvement in counseling patients, dispensing medications, providing clinical and MTM services, and vaccinations. **Implications:** These data may inform SOPs interested in opening a pharmacy. Such pharmacies may serve as a venue for progressive pharmacy practice.

Pulmonary Therapeutics Module Write Your Own practice Exam Question Assignment: Attitudes and Perceptions Qualitative Analysis.

Jordan M. Rowe, *UAMS*, Tessa Wiley, *University of Arkansas for Medical Sciences*, Jacob T. Painter, *University of Arkansas for Medical Sciences*, Ashley N. Castleberry, *University of Arkansas for Medical Sciences*, Drayton A. Hammond, *University of Arkansas for Medical Sciences*. **Objectives:** To evaluate students' attitudes and perceptions towards a write your own practice exam question assignment and optional quiz containing all practice exam questions in a pulmonary module within a therapeutics class. **Method:** An IRB-approved questionnaire was provided to third-year students enrolled in a required therapeutics class at a single institution. Two co-investigators performed a thematic analysis on students' responses to questions regarding their likes, dislikes, and suggested improvements for the assignment using the copy-and-paste method in the qualitative data analysis software MAXQDA. **Results:** In total, 118 students completed the assignment. Eight themes were identified through thematic analysis. Students indicated that they understood the material related to the learning objective for which they wrote a practice exam question. Students also identified where their gaps in knowledge existed following completion of the optional quiz. Overall students' understanding and exam preparation habits were improved. Students thought there were too many questions to review and would have appreciated a more thorough vetting of the questions prior to making them available. They identified a small selection of questions that could have been worded more effectively. Some students considered the assignment busy work and believed that the exam questions were too dissimilar to the practice questions. Finally, students believed their assignment objective was too broad to write a single good practice question. **Implications:** Qualitative analysis of students' questionnaire responses identified themes that otherwise would not have been appreciated. Many students experienced positive benefits from the writing assignment and optional reviewing of practice exam questions.

Pulmonary Therapeutics Module Write Your Own Practice Exam Question Assignment: Attitudes and Perceptions Quantitative Analysis.

Drayton A. Hammond, *University of Arkansas for Medical Sciences*, Tessa Wiley, Jordan M. Rowe, *UAMS*, Ashley N. Castleberry, *University of Arkansas for Medical Sciences*, Jacob T. Painter, *University of Arkansas for Medical Sciences*. **Objectives:** To evaluate students' attitudes and perceptions towards a write your own practice exam question assignment and optional quiz containing all practice exam questions in a pulmonary module within a therapeutics class. **Method:** An IRB-approved questionnaire was provided to third-year students enrolled in a required therapeutics class at a single institution. Attitudes and perceptions of the assignment were examined using descriptive statistics. **Results:** In total, 118 students completed the assignment, of whom 1 was familiar with and 2 understood Bloom's taxonomy. Only 2 students used self-generated practice questions for >51% of exams. Most students (65.2%) spent 10-30 minutes preparing their question. Half of the students (50%) believed their understanding of the material would be more complete after taking the optional quiz composed of practice exam questions, and 50% took the quiz to discover their knowledge deficits. A quarter (28.8%) of students did not have time to take the optional quiz. Only 1 student did not take the quiz because he believed he understood the material well enough already. A quarter (23.7%) of students felt more prepared for the exam than usual. A quarter (28%) of students believe this assignment should be used in 51-100% of therapeutics modules, and 78% believe this assignment should be required in this module. **Implications:** This assignment required less than 30 minutes for students to complete and provided a database of practice exam questions from which most students benefited. Dissemination methods of practice exam questions and future use of this assignment will be evaluated.

Qualitative Analysis of Students' Opinions Regarding a Fast-paced, Interactive Learning Session on Pulmonary Arterial Hypertension.

Tessa Wiley, *University of Arkansas for Medical Sci*, Jordan M. Rowe, *UAMS*, Jacob T. Painter, *University of Arkansas for Medical Sciences*, Ashley N. Castleberry, *University of Arkansas for Medical Sciences*, Drayton A. Hammond, *University of Arkansas for Medical Sciences*. **Objectives:** To evaluate students' opinions regarding a fast-paced, interactive, in-class learning session (FIILS) on pulmonary arterial hypertension (PAH) concepts. **Method:** An IRB-approved questionnaire was provided to third-year students enrolled in a required therapeutics class at a single institution. Two co-investigators performed a thematic analysis on students' responses to questions regarding their likes, dislikes, and suggested improvements for the FIILS on PAH using the copy-and-paste method in the qualitative data analysis software MAXQDA. **Results:** Overall, 122 students completed the assignment. Ten themes were identified through thematic analysis. Students indicated that their learning was improved by convenience, accommodating to their learning styles, encouraging preparation in advance, utilizing active learning, and effective slide and handout formatting. Students indicated that their learning would have been improved if the material were condensed, presentation speed was slowed, there was no pre-recorded lecture, and a different program was used for the pre-recorded lecture. Students frequently commented that nothing should be changed with the teaching method. **Implications:** Qualitative analysis of students' questionnaire responses identified themes that otherwise would not have been appreciated. Many students experienced positive benefits from the FIILS on PAH. Condensing the material in the pre-recorded lecture and FIILS may allow for concepts to be presented in more detail and at a slower pace of speech. Utilizing this teaching method for other

topics should be considered, and the results of those efforts should be evaluated using quantitative and qualitative measures.

Reliability of Peer Assessments Compared With Faculty Assessments When Evaluating Individual Case Presentations.

Shannon Heintz, *Iowa City VA Medical Center*, Molly Polzin, Tiffany Tierney, *University of Iowa College of Pharmacy*, Stevie R. Veach, *The University of Iowa*, Clarence Kreiter. **Objectives:** To evaluate and compare the reliability of peer and faculty assessments of individual case presentations. **Method:** Clinical Practice Skills II is a third-year Doctor of Pharmacy course with 107 students enrolled. Students are assigned two cases and work with a team of three students to identify drug therapy problems and recommend a care plan. The class is split into three sections and each group member presents their case to their section independently. One faculty member and five peer evaluators score each presentation using a standardized evaluation form and rubric. Each student presented two case presentations over the semester. Scores were analyzed with Generalizability (G) theory analysis in order to determine the reliability of the scores across a multi-faceted measurement process. A higher G score indicates a higher degree of reliability. **Results:** For a grand mean score across two presentations and five peer raters nested within each student and each of the two presentations (a total of 10 peer raters and 2 presentations / 10 scores) a reliability (a G coefficient) of 0.54 was obtained. The G for the grand mean of one faculty rater nested within each of two presentations (a total of 2 faculty raters and 2 presentations / 2 scores) was 0.12. **Implications:** Given the low reliability obtained with two faculty ratings, the validity of this assessment procedure is also low. Peer assessments provided a more reliable score and given the small expense are more efficient and likely more valid than using a small number of faculty ratings.

Results Following Implementation of an E-portfolio of Professional Activities.

Carrie L. Griffiths, *Wingate University*, Laura Bowers, *Wingate University*, Megan Ducker, *Wingate University*, Janine Douglas, *Wingate University*, Tanya R. Riley, *Wingate University*, Nicholas Wright, *Wingate University*, Michael W. Neville, *Wingate University*, Kalyn Meosky, *Wingate University*. **Objectives:** The Professionalization Committee at our institution implemented a professional development component to the curriculum in Fall 2015. This component was incorporated in response to Domain 4 of the 2013 CAPE Educational Outcomes and Standard 4 of the ACPE Standards 2016. Student participation following the first year was assessed to determine professional involvement. **Method:** Students complete an annual survey while in pharmacy school and 1 year after graduation. The survey assesses perceptions and behaviors in regards to professionalism and leadership. Student involvement in the following professional categories was also assessed: White Coat Ceremony, Career Fair, Student Development Series (SDS), and Professional Organizations. **Results:** All students attended the White Coat Ceremony (n=114). The career fair was attended by 48.2%. Of the 4 SDS offered this year: 11.4% of students attended 0, 19.3% attended 1, 29.8% attended 2, 32.5% attended 3, and 6.1% attended 4. Student organization involvement includes 46.5% in the North Carolina Association of Pharmacists and 90.4% involved in 1 or more student organization(s). Leadership involvement includes 4.4% as committee chairs and 3.5% as executive board members. **Implications:** First year pharmacy student involvement has increased after implementing this program. SDS involvement is expected to increase since students are required to attend 4 SDS events during their first year. It is anticipated that leadership involvement will grow as students progress through the academic program.

Retention of Students' Ability to Incorporate a Computer into Simulated Patient Encounters. Jessica M. Bellone, *Concordia University Wisconsin*, Sarah Ray, *Concordia University Wisconsin*, Kassandra M. Bartelme, *Concordia University Wisconsin*. **Objectives:** To improve retention of pharmacy students' ability to appropriately incorporate a computer into simulated patient encounters (SPEs) in a practice skills lab over three consecutive semesters. **Method:** Students were initially required to utilize a computer to document clinical information gathered from simulated patients in the spring P2 semester. After this initial activity, students received lecture-based instruction on appropriate computer use during patient encounters. Students' performance was evaluated using a rubric prior to and after receiving the lecture-based instruction in the spring P2 semester. Students were then evaluated during the third year of the lab series using the same rubric. **Results:** Prior to receiving lecture-based instruction in the spring P2 semester, 41% of 64 students effectively incorporated a computer into a SPE. After receiving instruction, 62% of students demonstrated appropriate computer use during a SPE in the spring P2 semester ($p < 0.05$). Students continued to demonstrate retention of this skill throughout the third year of the lab series, with 76%, 80%, 74%, and 87% of students demonstrating appropriate computer incorporation in the subsequent four clinical based SPEs, respectively (all $p < 0.05$ compared to pre-instruction). **Implications:** Instruction and repetition improves pharmacy students' ability to incorporate a computer into SPEs, a critical skill in building and maintaining rapport with patients and improving efficiency of patient visits. Students were able to retain this skill throughout two subsequent semesters. Potential future research includes evaluating computer use skills of APPE students and practicing pharmacists.

Role of Fourth Year Pharmacy Students and Pharmacist on an Interprofessional Medical Brigade in Guatemala. Nicole J. Asal, *The University of Rhode Island*, Janelle Poyant, Melissa Striglio. **Objectives:** To evaluate the roles and impact of fourth year pharmacy students and a pharmacist integrated into an interprofessional team on a medical brigade in the surrounding area of Quetzaltenango, Guatemala. **Method:** An electronic survey was administered to all team members upon completion of travel. Asked about the most useful service provided by the pharmacist and pharmacy students on the brigade, change in perspective towards the role of pharmacy on an interdisciplinary healthcare team, and satisfaction with communication, efficiency, professionalism and knowledge of the pharmacist and pharmacy students. **Results:** 100% of participants view the role of a pharmacist more positively after the brigade. Most useful pharmacy services: knowledge of drug products (38%), therapeutic substitution (23%), patient counseling (15%), drug dosing and calculations (15%), pharmacy organization and workflow (8%), dispensing efficiency (1%). After the trip, percentage of brigade members that strongly agreed with the following statements increased: 1. I appreciate the importance of working as a team to carry out the goals and activities of a medical brigade. 2. I am better prepared to work as part of a team. 3. Pharmacists are an important part of the medical team. 4. I am likely to refer a drug-related question to a pharmacist/pharmacy student in the future. **Implications:** Inclusion of pharmacy staff improved attitudes and opinions towards the pharmacy profession, working as part of a medical team, and likelihood of referring questions to pharmacists in the future.

Self-Directed Learning and Pharmacotherapy Group Presentation during Gastroenterology and Nutrition Block: Student and Faculty Perspectives. Marina Kawaguchi-Suzuki, *Pacific University Oregon*, Anita J. Cleven, *Pacific University Oregon*, Ryan Gibbard, David Fuentes, *Pacific University Oregon*. **Objectives:** Incorporation of self-directed learning and group presentation can be challenging for

a short-block course. The aim of this study was to examine effectiveness and feasibility of these activities during a 3-week Gastroenterology and Nutrition Pharmacotherapy course with 42 classroom contact hours. **Method:** Sixteen groups of 6-7 students developed 30-min presentations, including Element-1, an assigned patient case, and Element-2, a "novel" topic not presented during didactic lectures. Pre- and post-surveys were conducted with Qualtrics. **Results:** Ninety two students completed both pre- and post-surveys. Significant improvement by students' ratings was demonstrated on a scale of 0-10 in various aspects: self-teaching strategy (+0.76, $p = 0.001$), drug information skill (+0.60, $p = 0.003$), independent evaluation of information (+0.76, $p = 0.001$), extraction of relevant information (+0.50, $p = 0.03$), peer-teaching on a new information (+0.63, $p = 0.004$), effective summary of information (+0.87, $p < 0.0001$), effective written communication (+0.82, $p < 0.0001$), effective oral communication (+0.93, $p < 0.0001$), and confidence in presenting (+0.83, $p = 0.002$). As presentation elements to be continued for future classes, students identified Element-1 (58%), Element-2 (14%), both (20%), or neither (8%) whereas faculty members identified Element-1 (10%), Element-2 (11%), both (78%), or neither (1%). Reported preparation time was 114 ± 107 minutes to speak for 4.70 ± 6.15 minutes and to make 8.49 ± 25 slides (mean \pm standard deviation). Faculty survey indicated 82.8% of them learned something new and interesting by attending students' presentations. **Implications:** Pharmacotherapy group presentations provided effective and feasible self-directed learning during a short-block course. While students preferred a patient case presentation, faculty responses supported inclusion of "novel" information.

Situation, Background, Assessment, Recommendation (SBAR) Technique Education to Enhance Pharmacy Students' Interprofessional Communication Skills. Lindsay A Brust-Sisti, *Rutgers University*, Lucio Volino, *Rutgers, The State University of New Jersey*, Rolee Das, *Rutgers, The State University of New Jersey*. **Objectives:** The primary study objective was to assess the impact of Situation, Background, Assessment, Recommendation (SBAR) education on pharmacy students' communication with other healthcare providers. Secondary objectives were to: identify factors associated with improved communication skills and evaluate the impact of SBAR education on students' confidence in their ability to provide interdisciplinary communication. **Method:** This was an evaluator and investigator-blinded, pre- and post-intervention study. Students enrolled in a required third professional year pharmacy course completed a simulated activity involving communication with a healthcare professional before and after SBAR technique education. The intervention consisted of a lecture and small-group practice session. Study objectives were assessed through pre- and post-intervention activity grade comparisons and corresponding paper-based survey perception responses. **Results:** A total of 192 grades and survey responses were included in the analysis. The average pre-assessment grade was 12/20 points and post-assessment grade was 17/20 points ($p < 0.0001$). The majority of students reported ≤ 2 years of pharmacy-related work experience (34%), no interprofessional activity participation (70%), and experience making a medication-related intervention (52%). Post intervention survey results indicated that 82 (43%) and 177 (92%) of students were confident in their ability to deliver a medication-related recommendation, before and after the intervention, respectively. Ninety-seven students (51%) "strongly agreed" and 81 (42%) "agreed" that the activity enhanced their communication skills. **Implications:** Providing SBAR education improved students' one-on-one grades, indicating that education on the SBAR technique enhances students' abilities to communicate with other healthcare providers. Students reported an increase in confidence and value of the activity.

Spacing Practice Improves Retention in the Self-paced Learning of Brand/Generics. James Terenyi, Heidi N. Anksorus, *University of North Carolina at Chapel Hill*, Adam M. Persky, *University of North Carolina at Chapel Hill*. **Objectives:** Students will attempt to learn material all in one sitting (a Massed Schedule) whereas other students will study over time (a Spaced Schedule). In addition, some students will study and re-study and not practice retrieving information. We experimentally tested the impact on learning brand/generic drug information when various schedules of retrieval practice were employed in a self-paced course. **Method:** Students (n=151) completed weekly quizzes during the semester on the-brand/generic for 100 commonly prescribed drugs. Each student completed part of the drug list on a schedule of equal, expanding, or contracting spacing, or just one practice (massed) or study only in a counterbalanced design. The primary outcome was performance on a 50-question, fill-in-the-blank assessment 6 weeks after the course concluded. **Results:** On measures of long-term retention, the contracting spacing schedule led to superior retention (67.2%) compared to the massed practice (50.1%, $p<0.001$) and study only condition (45.6%) ($p<0.001$) but not significantly different than expanding practice (58.3%, $p=0.229$) or equal practice (58.7%, $p=0.283$). The study only condition resulted in lower retention compared to all conditions except massed practice. Overall performance decreased by almost 50% (final exam 95%, long-term retention 55%) over a 6-week period. **Implications:** Students could retrieve a large fraction of name-brand/generic conversions after 6 weeks of not studying or practicing. A contracting spacing schedule was the best schedule of practice. Follow-up studies are needed to determine which schedules will show superiority over longer retention periods.

Specialization within Pharmacy Education: A Survey of Curricular Track or Concentration Offerings. Katelyn Parsons, *Western New England University*, Kaylee Maynard, Beth E. Welch, *Western New England University*, Eric C. Nemece, *Western New England University*. **Objectives:** The purpose of this national survey was to determine the prevalence and types of different curricular tracks or concentrations within colleges and schools of pharmacy. Additionally, this survey sought to understand the requirements for identified tracks or concentrations. **Method:** A survey instrument was developed and piloted. It was distributed electronically via SurveyMonkey to the AACP Curriculum SIG Contact List which is comprised of 116 individual institutions. **Results:** Of the 56 respondents, 21% (n=12) indicated their institution currently offers specialized tracks; however, 50% (n=22) without tracks indicated they are under consideration or already planned for the future. The most commonly cited reasons of why tracks are not offered were logistics of faculty (43%) and oversight (30%). The most common areas of focus were advanced clinical/pharmacotherapy (n=6) and pharmacy management/administration (n=6). The majority of tracks start concurrently with therapeutics in the curriculum. Schools frequently reported either an Assistant/Associate Dean or individual faculty member had oversight of the track and utilized an average of 4.6 faculty members per track. The majority of these tracks did not require a summative evaluation such as a capstone (n=8) and offered a certificate as a student deliverable (n=8). Tracks generally consisted of 6 elective didactic credits, 4 required didactic credits, and 1 or 2 APPE rotations. **Implications:** Though few schools currently offer specialized elective tracking, half of respondents without tracks are considering departing from the generalist approach to pharmacy education. Implementation of these tracks involve significant faculty effort which needs to be weighed against anticipated benefits of tracks or concentrations.

Student Perception of a Global Health Elective in a PharmD Program. Gina M. Prescott, *University at Buffalo, The State University of New York*. **Objectives:** A 1-credit, didactic global health elective was developed in order to prepare students for a global society and/or experiences in global health fieldwork. The primary objective of this study was to assess student perceptions of this elective. **Method:** A 24-question pre-course and 14-question post-course survey was distributed at the start and end of the first and last class of the semester, respectively. Survey sections included demographics and pre-/post-course comparison ratings. Student global health knowledge and patient care confidence was assessed with a 5-point Likert Scale. All data was de-identified and analyzed in an Excel spreadsheet after grades were submitted. Wilcoxon Rank Sum was used to compare paired, ordinal data. **Results:** All 24 students (18 professional year-2 and 6 professional year-3) students enrolled in the course completed the survey. An increase in perceived knowledge for all global health topics was found ($p<0.05$). The greatest changes from baseline were in global healthcare systems (Post Class Median: 4 (IQR: 4-5); Change: 2), Tropical Diseases (Post Class Median: 4; Change: 2; IQR: 4-5), Non-communicable Diseases (Post Class Median: 4; Change: 2; IQR: 4-5) and Counterfeit Medications (Post Class Median: 5 (IQR: 4-5); Change: 2). Perceived confidence for interacting with global patient populations (Post Class Median: 4; Change: 1; IQR: 4-5) and application of learned concepts (Post Class Median: 4; Change: 1; IQR: 4-5) were also significantly increased ($p<0.05$). **Implications:** Consideration should be made to develop a global health elective for students interested in this topic or for foundational knowledge prior to study abroad.

Student Perceptions and Use of Active Retrieval as a Primary Study Method. Elizabeth M. Lafitte, *The University of Louisiana at Monroe*, Michelle O. Zagar, *The University of Louisiana at Monroe*, David J. Caldwell, *The University of Louisiana at Monroe*. **Objectives:** The purpose of this study was to educate students about evidence-based learning strategies and implement an early intervention program based on these principles to decrease rates of non-progression in two historically difficult courses. **Method:** During a pre-semester boot camp prior to the P1 year, students' knowledge, habits and attitudes toward evidence-based study strategies was surveyed; students enrolled in Drug Action I and Pathophysiology I were given instruction on learning strategies, including retrieval-based learning, that was reiterated through emails throughout the semester. Weekly, no-stakes practice quizzes were generated through a student-led process and made available for all students through ExamSoft®. Students were allowed to review their performance on each quiz after its completion. Students were also asked to complete a follow-up survey about use of evidence-based study methods during the fall 2015 semester. **Results:** At baseline the top three most frequently used primary study methods were passive strategies. All students identified for the early intervention group participated in active retrieval practice through no-stakes quizzing. Eighty-three percent of students believed that when active retrieval was used as a primary study method it had a good or very good effect on exam performance. Non-progression rates were reduced from 4.5% to 0% compared to the previous years' offerings of both courses. **Implications:** Facilitating active retrieval practice encourages students to incorporate evidence-based study strategies instead of relying on familiar passive methods. More research should be done to determine the extent to which encouraging active retrieval can affect course grades.

Student Perceptions of a Blended-learning Model Designed to Teach Patient Assessment Skills in a PharmD Program. William A. Prescott, *University at Buffalo, The State University of New York*, Fred Doloresco, *University at Buffalo, The State University of New York*, Ashley Woodruff, *University at Buffalo, The State University of New York*, Nicole Paolini-Albanese, *University at Buffalo, The State University of New York*, Christian Bernhardt, *University at Buffalo School of Pharmacy and Pharmaceutical Sciences*, Gina M. Prescott, *University at Buffalo, The State University of New York*. **Objectives:** To assess student perceptions of a blended-learning model for teaching patient assessment skills in a PharmD program. **Method:** A blended-learning model consisting of a “flipped-classroom” was integrated into our school’s patient assessment sequence (PA1 and PA2) during the 2014-15 academic year. Students were educated using online videos prior to class, paired with team- (TBL) and case-based learning in the classroom. An anonymous, pre-tested, paper survey-instrument was distributed at the end of each semester to all students enrolled in the “traditional-classroom” model during the 2013-14 academic year (control) and the blended-learning model during the 2014-15 academic year (intervention). Degree of agreement was compared between groups using the Fisher’s exact test. **Results:** Response rates for the PA1 and PA2 surveys were 89.5% (n=231) and 87.9% (n=226), respectively. A higher proportion of the PA1 intervention group ‘agreed’ (i.e., ‘agreed’ or ‘strongly agreed’) that the instructional methodologies facilitated their understanding of the material: PA1- 92.6% vs. 77.4% (p<0.05); PA2- 79.7% vs. 81.4%. The intervention group preferred online videos to in-class lectures (62.8% vs. 13.8%), and indicated that learning foundational content before class enhanced their learning during class (83.9% ‘agreed’ vs. 3.6% ‘disagreed’). The intervention group indicated that pre-class videos (92.3% ‘agree’ vs. 2.0% ‘disagree’), TBL (84.7% ‘agree’ vs. 5.6% ‘disagree’), and case-based learning (85.5% ‘agree’ vs. 4.0% ‘disagree’) contributed to their learning. **Implications:** Student perceptions of the blended-learning model, particularly within PA1, was positive. Schools across the Academy should integrate active learning strategies, similar to what is described here, into their curricula.

Student Perceptions of a Two-Day Comprehensive Tobacco Dependence Treatment Elective Course. Nicholas Messinger, *University of Cincinnati*, Karissa Y. Kim, *University of Cincinnati*, Patricia R. Wigle, *University of Cincinnati*. **Objectives:** The objective of this study was to evaluate students’ perceptions of a two-day comprehensive tobacco dependence treatment elective “blast” course. **Method:** Students completed pre and post-course surveys related to comfort level and confidence in tobacco dependence treatment and counseling. The survey also included questions about the “blast” course format. **Results:** A total of 45 students took this course. At beginning of the course, 25 of 45 (51.1%) students felt comfortable with smoking cessation counseling and 18 of 44 (40.9%) were familiar with the US Public Health Service treating tobacco use clinical practice guidelines. While 24 of 33 (72.7%) were comfortable with selecting appropriate pharmacotherapy, only 24 of 45 (53.3%) were comfortable in monitoring and helping patients sustain their cessation plan. The overall confidence in comprehensive smoking cessation counseling, on a scale of 1-10, was a mean of 5.0 (SD ± 1.9). At the end of the course, 44 of 45 (98.7%) students felt comfortable with smoking cessation counseling. All students felt comfortable with choosing pharmacotherapy and monitoring and helping patients sustain their cessation plan. The overall confidence in comprehensive smoking cessation counseling increased to a mean of 8.1 (SD ± 1.0). Almost all students (> 90%) had never taken a “blast” course. They liked the format and would take another blast course, if offered. **Implications:** A two-day comprehensive

tobacco dependence treatment elective “blast” course was well received by students. Post-course, there was an increase in student confidence in comprehensive smoking cessation counseling.

Student Pharmacist Perception of Pharmacy Simulation Lab Experiences at a Private Research Intensive Institution. Karen A Khalil, *Northeastern University*, Stephanie L Sibicky, *Northeastern University*, Jennifer Kirwin, *Northeastern University*. **Objectives:** To report 3rd professional year (P3) pharmacy student perceptions after a hi-fidelity simulation experience. The data will be used for quality improvement purposes to integrate more simulation-based education into the program. **Method:** P3 students participated in a simulation experience about enteral and parenteral access lines as a part of the Comprehensive Disease Management (CDM) Seminar. The objectives of this activity were to identify the purpose and anatomic position of various catheters, enteral tubes, and devices, identify adverse events and drug-related problems, and provide drug education to a patient and health care professional. Students completed the experience in small groups and were assessed via rubric. Finally, students were asked to complete a voluntary, anonymous post-simulation survey. **Results:** One hundred and six students participated in the simulation experience wherein 79 percent completed the post-simulation survey. Respondents felt the simulation was an effective method of learning; reporting overall positive feedback regarding the realistic nature of the experience and the debrief process. Ninety-three percent felt that more simulation experiences should be incorporated into the PharmD curriculum. Many felt the lab effectively supplemented CDM material. Students suggested that smaller groups would be more effective and would like more direction and clearer expectations prior to the experience. Overall, students were excited about the experience and reported positive feedback regarding the simulation. **Implications:** Student pharmacists reported positive feedback regarding the simulation experience and desired the integration of more simulation-based education within the PharmD program.

Student Pharmacist’s Attitudes Towards Individuals Experiencing Homelessness in an Interprofessional, Co-Curricular Program. Justine S. Gortney, *Wayne State University*, Jeremy Delor, *Wayne State University*, Mary Beth O’Connell, *Wayne State University*, Jennifer Mendez, Ph.D., *Wayne State University Medical School*, Eric M Szydowski, *Michigan Pharmacist Association*. **Objectives:** To evaluate use of a modified survey tool and determine if student pharmacists’ attitudes towards homeless individuals were impacted based upon participation in our Community Homeless Interprofessional Program (CHIP). **Method:** Students surveyed participated in CHIP, a supervised, interprofessional, once monthly clinic where they provide health assessment and education to the homeless. Student pharmacists completed a modified Health Professionals’ Attitudes Toward the Homeless Inventory (HPATHI) survey, a 19-item, 3-dimension (personal advocacy, social advocacy, cynicism) instrument validated with medical students and physicians, before and after CHIP. Attitudes were measured on a 5-point Likert scale (5 = strongly agree). Higher scores indicate more favorable attitudes about homelessness. Pre and post CHIP survey scores were compared using Wilcoxon signed-ranks test, and Cronbach’s alpha used for reliability of instrument. **Results:** 22 students completed the survey. Survey scores showed a small but significant increase (Z = -1.73, p=0.042, one-tailed) from pre-CHIP (4.2 ± 0.41) to post-CHIP (4.3 ± 0.43), with a small effect, r=0.27. Items for each of the 3 HPATHI dimensions were assessed for reliability; Cronbach’s alpha ranged from 0.71-0.91. **Implications:** Student pharmacists had positive attitudes towards homeless individuals before and after providing care to them. The

significant but small change could be due to sample size, concomitant learning from IPPE in underserved clinics, and clinic focus on immediate care not social change. These preliminary results suggest that a modified HPATHI may be useful in evaluating student pharmacist attitudes towards homeless populations, but further investigation is warranted in larger student populations in pharmacy co-curricular or curricular programs.

Student Preparation Time for Traditional Lecture vs. Team-based Learning in a Pharmacotherapy Course. Beth M. DeJongh, *Concordia University Wisconsin*, Nicia Lemoine, Elizabeth A. Buckley, *Concordia University Wisconsin*, Laura Traynor, *Concordia University Wisconsin*. **Objectives:** Determine how much time students spent preparing for traditional lecture versus team-based learning (TBL) before class for a pharmacotherapy course. **Method:** Instructors used a combination of traditional lecture and TBL to deliver material during a semester-long course. Before each lecture, instructors recorded the amount of time students spent preparing for each method using a one-question clicker-response survey. **Results:** Instructors delivered 19 hours of TBL and 37 hours of traditional lecture. Approximately 86% of students completed the survey. The majority of the class (74%) spent less than 30 minutes preparing for a 2-hour traditional lecture (no preparation 38%, less than 30 minutes 36%). Sixty-one percent of students spent between 30 minutes and 2 hours preparing for a 2-hour TBL session (between 30 minutes and 1 hour 20%, between 1 and 1.5 hours 26%, between 1.5 and 2 hours 15%) and only 10% of students spent more than 3 hours preparing. **Implications:** A common student complaint about TBL is that it takes too much preparation time. Results of this study indicate students may feel this way because they spend little to no time preparing for traditional lecture. In general, TBL preparation time met professor expectations and was not excessive based on the credit load and difficulty level of the material.

Student Confidence in Ability to Pass the NAPLEX Before and After a Faculty-led Review Course. Erin D. Callen, *Southwestern Oklahoma State University*, Tiffany L. Kessler, *Southwestern Oklahoma State University*, Lisa A. Appeddu, *Southwestern Oklahoma State University*, Cheri K. Walker, *Southwestern Oklahoma State University*, Kristin Montarella, *Southwestern Oklahoma State University*, Krista G. Brooks, *Southwestern Oklahoma State University*. **Objectives:** A faculty-led NAPLEX review course was offered to second semester, P4 students at Southwestern Oklahoma State University College of Pharmacy (SWCOP) in May 2014 and May 2015. This course provided a review of calculations, pharmacokinetics, and a case-based overview of various disease states and related pharmacotherapy. The primary objective of this study was to determine student confidence in their ability to pass the NAPLEX exam before and after the review course, and how this course impacted student preparation. A secondary objective was to evaluate perceived usefulness of other NAPLEX preparation tools. **Method:** Electronic surveys were sent to SWCOP graduates who participated in the review course. Demographic characteristics and questions related to primary and secondary objectives were asked. Data was analyzed using dependent t-tests to compare the mean ratings of self-reported confidence. This study was approved by the University's Institutional Review Board. **Results:** Of the 64 graduates who participated in the review course, 44 (69%) completed the survey. Prior to the course, 34% gave a positive response regarding their confidence in passing the NAPLEX versus 52% after the course. The mean difference was significant ($P < 0.01$). Overall, 91% believed the review course helped identify areas of weakness, and 72% increased their planned preparation time for the exam. In addition, students evaluated the usefulness of 13 NAPLEX

preparation tools. **Implications:** The SWCOP NAPLEX review course will continue due to increased student confidence and preparation time. Findings regarding other preparation tools will be utilized in making future recommendations to students.

Student Confidence, Intentions, and Factors Regarding Pursuit of Postgraduate Residency Training Following an Elective. Tessa Wiley, *University of Arkansas for Medical Sci*, Jordan M. Rowe, *UAMS*, Jacob T. Painter, *University of Arkansas for Medical Sciences*, Drayton A. Hammond, *University of Arkansas for Medical Sciences*. **Objectives:** To evaluate changes in students' confidence, intentions, and perceived motivating factors and barriers regarding pursuit of postgraduate residency training (PGRT) following completion of an elective in preparation for pursuing PGRT. **Method:** An IRB-approved questionnaire was provided to students in two consecutive classes enrolled in a preparation for pursuing PGRT elective prior to and after completion of the elective. Students' confidence in accomplishing course objectives and perceived motivating factors and barriers pursuing PGRT were evaluated with Wilcoxon sign rank test. Intentions to complete postgraduate training were evaluated with McNemar's test. **Results:** Twenty-seven students completed the questionnaire before and after the elective course. Students' confidence increased for all 20 course objectives following elective completion ($p < 0.05$). The three most important perceived motivating factors to pursuing PGRT were to gain knowledge and experience, desire for specialized training, and to gain confidence. The three most important perceived barriers to pursuing PGRT were job availability upon graduation, competition for highly sought after programs in the area, and disappointment of not matching. More students were interested in completing PGY-2 PGRT ($p = 0.096$), a fellowship ($p = 0.001$), or graduate school (0.014) following the elective. **Implications:** Students who completed an elective in preparation for pursuing PGRT were more likely to indicate a desire to pursue advanced, postgraduate training. Students' confidence in areas that are important for their success in understanding, matching with, and performing well in a postgraduate training program improved as well. Intentional, didactic teaching on postgraduate training opportunities and pursuit may increase students' desires to pursue these programs.

Student Perception of the Impact of Audience Response Software in a Team-based Learning Self-care Course. Clark Kebodeaux, *University of Kentucky*, Jamie Shelly, *St. Louis College of Pharmacy*, Golden L. Peters, *St. Louis College of Pharmacy*, Patrick Finnegan, *St. Louis College of Pharmacy*. **Objectives:** Evidence evaluating audience response systems (ARS) used in team-based learning (TBL) compared to traditional classes is limited. The objectives of this study are to evaluate student perceptions of the technology and compare students' assessment of technology with their performance. **Method:** TBL was implemented in the required self-care course (PP2120: Introduction to Pharmaceutical Care: Non-prescription drugs) at St. Louis College of Pharmacy, and an audience response system was implemented in Fall 2015. At the conclusion of the course, a web-based survey was administered to students. **Results:** Of the 29 students who successfully completed the course, 23 (79%) completed the survey. Student response to the audience response technology was generally favorable. Of the students who responded "somewhat agree" and "strongly agree" to questions related to ARS, 87% were more actively involved in the case, 96% felt the visual responses made understanding easier, and 91% felt the ARS would be useful in other courses in the curriculum. Student performance in the course was analyzed by Pearson correlation and was positively correlated with students who self-reported as technology enthusiasts (0.509, $p = 0.016$) and early

adopters of technology (0.601, $p=0.004$). **Implications:** This is the first study to measure the impact of ARS with TBL implementation in a self-care course. ARS data can be used to help implement TBL in pharmacy school curricula and further research can be performed to link student adoption of technology to performance in courses that implement ARS.

Student-Identified Needs for a Pharmacy Residency Elective Planning Course (PREP Course). Doreen Pon, *Western University of Health Sciences*, Patrick Chan, *Western University of Health Sciences*, Mark Nguyen, *Western University of Health Sciences*, Emmanuelle Schwartzman, *Western University of Health Sciences*. **Objectives:** Competition for pharmacy post-graduate training program (PGTP) positions has become increasingly competitive. In 2015, only 65% of student applicants matched to a PGY-1 pharmacy residency. An elective course in PGTP preparation is planned for students at Western University of Health Sciences in 2016. An online survey regarding preparation for the PGTP application process was administered to students who applied to PGTPs in 2015. The objective of this study is to identify needs of student pharmacists applying for PGTPs. **Method:** An IRB-approved 18-question anonymous online survey was administered through Qualtrics® during class in March 2015 to fourth-year students. Students were asked to complete the survey if they applied to at least one PGTP. The survey included questions related to student confidence in their preparation for different components of the PGTP application process and types of interview structures encountered. Descriptive statistics were used to analyze results. **Results:** Of the students who completed the survey, 44 students submitted at least 1 PGTP application (mean 9.0, range 1-17) and 40 attended at least 1 interview (mean 3.7, range 0-12). Students frequently indicated that they felt “below average” in their preparation for answering clinical questions (48%), using PhORCAS (44%), and writing letters of intent (41%). Panel interviews, clinical questions, and case scenarios were most frequently encountered by students during interviews. **Implications:** Based on the survey results, a PGTP preparation elective course should include guidance in using the PhORCAS application portal, writing letters of intent, and practicing how to answer clinical and case-based questions during interviews.

Student-Led Medication History and Consultation Review Sessions: A Model for Facilitating Performance-Based Assessment (PBA) Preparation. Kathryn Zaborowski, *University of Wisconsin-Madison*, Hailey Keeser, *University of Wisconsin-Madison*. **Objectives:** To describe and evaluate a peer-teaching model that provides students additional instruction and practice preparing for PBAs. **Method:** Pharmacy Skills Lab course evaluations indicate students desire additional skills practice and feedback prior to PBAs. A full course schedule and high faculty workload are barriers to incorporation. Consequently, a new model was explored in which two third-year student pharmacists (P3) held optional skill-based review sessions for second-year student pharmacists (P2) before PBAs. The P3 students developed overview handouts and practice cases with faculty oversight. Open-format sessions focused on medication histories and consultations, including time for practice and case discussion. Following each session, students completed identical 10-11 question surveys containing yes/no, short answer, and Likert scale response formats. Student performance was not evaluated due to small sample size. **Results:** Seventeen students attended the consultation sessions, and 9 attended a medication history session; 26 completed the survey (100%). Students overwhelmingly reported sessions were beneficial; 100% reporting they should be held in future years, 96% agreeing/strongly agreeing sessions were helpful. Each P3 student spent 1.45h

facilitating sessions and 12h preparing/revising. **Implications:** Peer-led skills-based review sessions were well-received and represent a model for expanding PBA preparation opportunities while preserving faculty workload. Peer-teaching models may foster relaxed learning environments. Additionally, insight from senior students can facilitate identification of barriers to skill performance and guide review session development. In future years, methods to increase student attendance will be explored. Survey results find student leaders are beneficial additions to Schools of Pharmacy curricula.

Student-designed Rubrics for Special Administration Techniques: Impact on Counseling Confidence and Performance in Skills Lab. Michael L. Warren, *The University of Mississippi*, John P. Bentley, *The University of Mississippi*, Lauren S. Bloodworth, *The University of Mississippi*, Alicia S. Bouldin, *The University of Mississippi*, Dillon Clark, *BMH-North MS*, Anastasia Ballas Jenkins, Anne Marie Liles, *The University of Mississippi*, Megan Monteen, *BMH-North MS*, Rachel Robinson, *The University of Mississippi*, Matthew W Strum. **Objectives:** Objectives were to determine how students participating in designing specialized-administration rubrics comparatively: (1) performed on a student vs. faculty rubric as well as on OSCE vs. prior year OSCE and (2) self-perceived confidence pre- and post-activity. **Method:** A Fall 2015 PY2 skills lab activity utilized small groups (5-6 students) in the development of counseling tool for four specialized-administration techniques. A faculty instructor compiled all groups' tools to create one “consensus”, student-designed rubric for each technique. Consensus rubrics were redistributed prior to use in the course. Faculty instructors assessed counseling performance with a consensus rubric and a previously developed, faculty-designed rubric. Fall 2015 student-designed rubric scores were compared to: (1) Fall 2014 faculty-designed rubric scores and (2) Scores using the faculty-designed rubric. Confidence in providing counseling about special administration techniques was measured using a 5-point response format. The anonymous, 4-item survey was collected immediately prior to and one week after the lab activity. **Results:** The average 2015 student-rubric OSCE score was lower than 2014 faculty-rubric OSCE score (83.86% vs. 87.13%, $p=0.184$). The average faculty-rubric OSCE score in 2015 was also lower than in 2014 (87.13% vs. 77.68%, $p<0.001$); however, the average student-rubric OSCE score was higher than the faculty-rubric OSCE score in 2015 (83.86% vs 77.68%, $p=0.003$). Average confidence scores for all four techniques combined were higher post-activity than pre-activity (3.85 vs. 3.37, $p<0.001$). **Implications:** Improved confidence may suggest that this concept can be applied to other learning activities. Use of student-designed rubrics may also have potential, but additional research is warranted.

Students' In-class Knowledge of Pulmonary Arterial Hypertension Stratified by Cognitive Domain Level and Exam Performance. Ashley N. Castleberry, *University of Arkansas for Medical Sciences*, Tessa Wiley, Jordan M. Rowe, *UAMS*, Jacob T. Painter, *University of Arkansas for Medical Sciences*, Drayton A. Hammond, *University of Arkansas for Medical Sciences*. **Objectives:** To determine if students' knowledge of pulmonary arterial hypertension (PAH) concepts during a high-paced, interactive, in-class learning session (HIILS) stratified by Bloom's taxonomy of the cognitive domain was associated with exam performance. **Method:** Third-year pharmacy students in a therapeutics course were allowed to watch a pre-recorded lecture on PAH, participate in a HIILS on PAH, and answer a question on PAH on an exam. Chi-square test evaluated differences in correct responses during the HIILS. Regression analysis was performed to evaluate the association between correct responses during the HIILS and exam performance. **Results:** In total, 122 students completed the survey,

participated in the HILLS, and completed the exam. Fourteen students (11.5%) answered the exam question incorrectly. There was no difference in correct response by campus ($p=0.515$); however, more students who attended class less frequently (26-50% class attendance) answered the exam question incorrectly ($p=0.028$). There was no difference in median number of times the students viewed the pre-recorded lecture (1 vs. 1, $p=0.767$). The mean correct responses on questions during the HILLS were similar between students who answered the exam question incorrectly and correctly (8 vs. 8.6, $p=0.452$). Students answered a similar number of level 1 (3.86 vs. 4.08, $p=0.337$), level 2 (2.57 vs. 2.78, $p=0.235$), and level 3 (2.57 vs. 1.73, $p=0.205$) questions correctly. **Implications:** Students who answered the exam question incorrectly had similar knowledge of PAH concepts during the HILLS to students who answered correctly but attend class less frequently. Frequent class attendance should be encouraged in this course.

Task Analysis - The Forgotten Step in Designing Active Learning.

Dan Cernusca, *North Dakota State University*, Wendy I. Brown, *North Dakota State University*. **Objectives:** Using the Activity Theory framework, define the roles that production, distribution, consumption and exchange subsystems of an instructional activity have on a course redesign that sustains effective student engagement through active learning. **Method:** Approximately 90% of the current Ability Based Outcomes (ABOs) suggest the use of active learning as a means to assessing skills and behaviors. Many instructors in efforts to increase student learning while address current ABOs engage in application based class activities. Without a structured approach to the design and assessment of these activities, critical instructional elements may be missed. The constructs of production, distribution, consumption and exchange subsystems proposed by the Activity Theory framework when integrated as a task analysis step in the course redesign process helped a pharmacy instructor to convert lecture-based materials into effective active learning tasks. **Results:** The proposed task analysis framework allowed us to identify potential student resistance to active learning (consumption subsystem) that helped focusing the redesign on the application of knowledge tasks for active learning (production subsystem). Finally, to implement active learning tasks classroom technologies and an instructional designer (distribution subsystem) were important supporting factors. The positive impact of this strategy was reflected in both students' performance on SOAP note ($p<.001$) and transferred to the multiple-choices questions on topics covered in the active learning tasks ($p<.05$). **Implications:** The Activity Theory framework used as a task analysis tool allows instructors to strategically take into consideration both internal and external instructional variables in order streamline the creation of successful active learning curriculum.

Teaching Certificate Programs Offered by US Colleges/Schools of Pharmacy.

Mohammed A. Islam, *West Coast University*, Simi Gunaseelan, *The University of Texas at Tyler*, Rahmat M. Talukder, *The University of Texas at Tyler*. **Objectives:** The objective of this study is to evaluate teaching certificate programs offered by US colleges/schools of pharmacy which focus to prepare pharmacy residents for academic positions. **Method:** A 30-item survey instrument was distributed through SurveyMonkey to the Chairs of Pharmacy Practice of 132 ACPE-accredited and candidate-status PharmD programs. Survey items solicited information on design, implementation, outcomes and challenges of teaching certificate programs. Descriptive statistics was utilized for data analysis. **Results:** Out of 40 schools/colleges responded, 34 (85%) offer teaching certificate programs for pharmacy residents. The number of programs increased from 8 to 35 in last

10 years. Twenty four programs enroll both PGY1 and PGY2 residents while 10 programs enroll only PGY1. These programs utilize longitudinal, concentrated, or combination of both experiences to expose residents to the various aspects of teaching. While various teaching activities are required by all programs, the requirements for research design, project and grant proposal writing were reported by 23%, 20%, and 10% programs, respectively. With a total enrollment of 2,596 residents in 34 teaching certificate programs since inception, the overall completion rate is 91%. Data provided by 14 teaching certificate programs demonstrate that 33% of the graduates have accepted full-time faculty positions.

Implications: The results suggest an increasing trend in development of teaching certificate programs in recent years by colleges and schools of pharmacy. While requirements for teaching activities are consistent across the programs, there are opportunities to offer enhanced research related training to the future academicians.

Teaching Strategy to Improve Class Attendance and Student's Performance.

Dipan B. Ray, *Touro College of Pharmacy-New York*, Kenneth R Cohen, *Touro College of Pharmacy, New York*, Ronnie J. Moore, *Touro College of Pharmacy, New York*, Priyank Kumar, *Touro College of Pharmacy-New York*, Ankit Desai, *Touro College of Pharmacy, New York*. **Objectives:** To examine the impact of active teaching and active learning methodologies on class attendance and overall student performance during a P2 elective course. The purpose of this Complementary and Alternative Medicine (CAM) course is to help students identify and evaluate the therapeutic value, safety, and regulation associated with CAM therapies. **Method:** Student's performance and participation was evaluated by instructors during each lecture through post lecture in-class quizzes, active participation, and class attendance. Materials for lecture were not posted on "Blackboard" until the lecture was concluded. The final grade consists of lecture quizzes (30%), mid-term (40%) and the active learning project (30%). Students were required to complete an anonymous survey evaluating the teaching method, course content and faculty performance. Student feedback will be utilized to make necessary changes going forward. **Results:** The final active learning project was a patient counseling video created by 12 student groups comprised of 50 students in the class. Each video was evaluated by course instructors (faculty and residents) for content, counseling skills and creativity. The completed evaluations were compiled to assign a final project grade. Overall class scores ranged from 70% to 91% (passing score $\geq 70\%$). The average class attendance was 94%. However, the top 6% students (Scored $\geq 90\%$) had 100% class attendance, achieved a mid-term exam score of 87%, and exhibited better skills, participation and confidence in the active learning project. **Implications:** The teaching methodology used in the course helped improve overall class attendance, engagement and student performance in the course.

Teaching Pharmacy Students About Health Literacy: A Community-based Learning Activity.

Kathryn T. Knecht, *Loma Linda University*, Natasha Plantak, *School of Public Health/Loma Linda University*, Nancy E. Kawahara, *Loma Linda University*. **Objectives:** Health literacy, defined as the ability to understand and use health information, is a critical component in patient health. Health literacy is an important consideration for pharmacists, who must communicate appropriately with patients of varying levels of understanding. This project describes a community based learning activity designed to teach students how to assess health literacy. **Method:** As part of a required Professional Development class, students designed and implemented a health literacy booth at a local weekly market night over a five-week period. Each week, one of two health literacy instruments was administered to passersby: REALM (Rapid Evaluation of Adult

Literacy in Medicine – Short Form) or Newest Vital Sign. Survey data was collected, tabulated and results were presented to students at the end of the quarter. Students were required to submit a reflection describing a specific market night interaction and what they learned from it; an experience in health literacy from their own lives; and suggestions for improvement. **Results:** The 367 surveys collected indicated a range of responses among the market night population, consistent with previously reported data and demographics. Six themes in reflection statements were identified. **Implications:** A community based learning activity is a novel approach to teaching pharmacy students to understand and assess health literacy. Taking students out of the classroom and into the community to experience first-hand the potential impact of low health literacy was an effective teaching strategy. Follow-up activities in a clinical setting would further help students better understand the relevance of these concepts to their own practice.

The Effect of an Elective Course on Student Pharmacists' Perceptions Regarding the Pharmaceutical Industry. Bobby C. Jacob, *Mercer University*, Samuel K. Peasah, *Mercer University*. **Objectives:** To examine the effect of an elective course on student pharmacists' perceptions regarding the pharmaceutical industry. **Method:** The College of Pharmacy offers an elective course on the pharmaceutical industry. The course is open to 2nd and 3rd year pharmacy students and introduces them to skills and competencies required for practice in the pharmaceutical industry. Course topics include legal and regulatory overview, medical affairs, drug development, outcomes research, marketing, and leadership. During the spring 2015 semester, a 54-item, Likert scale survey that examined perceptions regarding the pharmaceutical industry was administered on the first and last day of class. Participation was voluntary. Institutional Review Board approval was obtained. **Results:** A total of 115 students have taken the course. Overall course rating was 4.7 out of 5.0. Twenty-four students completed the perception survey in spring 2015 (92% response rate). There were significant increases in the proportion of students with positive perceptions regarding industry's contribution to societal welfare (59% to 81%, $p=0.02$), drug safety (63% to 85%, $p=0.04$), cost (25% to 62%, $p=0.004$), trustworthiness of pharmaceutical companies (46% to 77%, $p=0.01$), and the benefits of direct-to-consumer advertising (25% to 50%, $p=0.03$). Furthermore, there was a significant increase in students' familiarity with types of drug information from industry such as medical information response letters, medical science liaison presentations, formulary dossiers, and branded prescription drug websites ($p<0.05$). **Implications:** There were significant changes in students' perceptions of the pharmaceutical industry. Further research is warranted to confirm these findings in a larger sample and to examine implications for pharmacy education.

The Impact of the Guidelines-Based Flipped Classroom Instructional Model on Pharmacy Student Perceptions. Khalid Alburikan, *King Saud University*, Hisham Aljadhey, *King Saud University*. **Objectives:** To explore the impact of using a low-cost innovative guidelines based homework flipped classroom on the students' learning level in clinical therapeutic course in the Doctor of Pharmacy program at King Saud University in Saudi Arabia. **Method:** In the intervention group, key foundational content of the Pathophysiology and Therapeutics I course was offloaded in a guidelines based homework. Homework questions were most commonly consist of 12-16 targeted questions requiring 60 minutes to complete. Class time was dedicated to application and discussion of lecture materials through active-learning exercises that utilize higher order cognitive skills. In the control group, the content of the Pathophysiology and Therapeutics II, was delivered through the traditional lecture format. **Results:** Survey

administered at the end of the both courses in 2015 ($n=30$) showed a positive attitude for learning content prior to class and using class time for more applied, case-based learning ($p=0.001$). In the guidelines-based flipped group, the students believed that learning the key foundational content prior to coming to class greatly enhanced in-class learning ($p=0.001$). The students felt they were engaged more in the class discussion ($p=0.008$), and went to the class more often ($p=0.007$). **Implications:** The guidelines-based flipped pharmacy classroom can be a cost-effective way to enhance the quality of students' learning. It can provide an opportunity for many schools of pharmacy with limited resources to explore the flipped classroom technique in pharmacy education.

The Influence of Academic Rank and Institution Type on Pharmacy Faculty Job Satisfaction. Cassandra Legari, *University of Charleston*, John Robinson, *University of Charleston*, Aymen Shatnawi, *University of Charleston*, David A. Latif, *University of Charleston*. **Objectives:** To compare pharmacy faculty members' satisfaction with academic role functions by academic rank and by type of institution. **Method:** This descriptive study used an online survey software to collect data from pharmacy faculty in the United States. The survey was distributed to members of the 2014-2015 American Association of Colleges of Pharmacy (AACP) roster. Baseline characteristics were analyzed using descriptive statistics. Responses to likert scale statements about academic roles (teaching, scholarship, and service) were analyzed, comparing faculty responses by rank and responses by type of institution using one-way Analysis of Variance (ANOVA). **Results:** Of eligible pharmacy faculty members, 559 (15.2%) participated in the survey. The majority (33%) of respondents were between the ages of 31-40 years, female (50%), and from Pharmacy Practice Departments (57.7%). Respondents included 55.2% at the assistant professor rank and 26.7% at the professor rank. Private and public institutions were approximately evenly represented at 44.3% and 46.1%, respectively. Professors were significantly more satisfied with scholarship than assistant professors and assistant professors were significantly more satisfied with teaching than professors. Overall, faculty members from public institutions were significantly more satisfied with scholarship activities than faculty members at private institutions. In both analyses, there was no overall significant difference in satisfaction with service roles. **Implications:** Job satisfaction appears to be influenced by multiple factors. Understanding these factors may provide insight for administrators and promote discussions regarding balance of academic roles, potentially improving satisfaction.

The Integration of Clinical Practice into a Medicinal Chemistry Laboratory. Surachat Ngorsuraches, *South Dakota State University*, Xiangming Guan, *South Dakota State University*, Deidra VanGilder, Rachel Elsey, *South Dakota State University*. **Objectives:** To evaluate student grades and perceptions of the integration of clinical practice into medicinal chemistry laboratory. **Method:** Two clinical faculty members and a medicinal chemistry faculty member generated four case studies and questions including drugs frequently used in clinical practice. The first case related stomach pH and oral absorption, while the second and third cases concerned prodrugs. The fourth case pertained to water solubility. A total of 83 first-year doctor of pharmacy students were divided into 16 groups and asked to discuss all cases and answer the questions. Each group turned in one copy of their answers, which were graded by the medicinal chemistry faculty member. A self-administered questionnaire survey was developed to examine how students perceived the integration on a 5-point Likert scale. Student groups' scores and data from the survey were descriptively analyzed. **Results:** The average overall score was 17 (out of 20) with a group that

had the minimum score of 11. Two student groups had full scores. Eighty-one students turned in their responses to the survey. The average perception score was 4.21 (out of 5). On average, the students rated higher than 4 for all perception questions, except the question pertaining to the length of time. Based on the questionnaire, they agreed most that incorporating clinical practice into the medicinal chemistry lab helps them understand more about medicinal chemistry with an average score of 4.55. **Implications:** The study results support the faculty to continue the integration of clinical practice into medicinal chemistry laboratory.

The Myth of Multitasking and What It Means for Future Pharmacists. Stephanie Enz, *Butler University*. **Objectives:** The purpose of this study is to show how multitasking affects the time it takes to check prescriptions as well as accuracy in identifying prescription processing errors. **Method:** 122 students, enrolled in the laboratory portion of Introduction to Dosage Forms, participated in the study. A survey to determine subjects' perception of multitasking ability was administered the first week of class. Each subject was a part of the experimental group and the control group. Subjects were told they would have 10 minutes to check 10 prescriptions. Subjects were not aware of how many errors were built into the exercise. Subjects in the experimental room were called by a researcher posing as a chatty customer. The subject was kept on the phone for 8 minutes during which time they continued to check prescriptions. Subjects were stopped at 10 minutes. If a subject finished early, their completion time was recorded. Subjects in the experimental group were given a 3 question quiz to assess engagement in the phone conversation. All documents were collected and de-identified by a third party for statistical analysis. **Results:** The control group took significantly less time than the multitasking group to complete the simulation (362.84 s vs. 448.93 s $p < 0.000$). Also the multitasking group caught less mistakes than the control group (6.72/10 vs. 8.51/10 $p < 0.000$). Most students identified as an average multitasker (69%) but there was no correlation to performance. **Implications:** These findings illustrate the negative implications of multitasking during tasks that require attention to detail such as prescription checking.

The Role of Online Learning in a Nationwide Survey of Student Pharmacists. Leslie A. Hamilton, *The University of Tennessee*, Katie Suda, *University of Illinois Chicago School of Pharmacy*, R. Eric Heidel, *University of Tennessee Medical Center*, Sharon McDonough, *The University of Tennessee*, Molly Hunt, Andrea S. Franks, *The University of Tennessee*. **Objectives:** Current student pharmacists have had significant exposure to online methods of learning in their pre-pharmacy educational experiences. With decreasing resources and faculty shortages in pharmacy education, online delivery of course content is an efficient way to deliver pharmacy curricula while optimizing classroom time for active learning strategies. The purpose of this study was to assess student preferences associated with the utility of online learning methods such as online platforms, social media, and handheld devices. **Method:** An anonymous, voluntary 14-question online survey was delivered to students at schools of pharmacy in the United States. Frequency statistics were used to establish prevalence of student preferences. **Results:** A total of 1749 students from 29 schools of pharmacy completed the survey. Of these students, 30% preferred a blended course structure (with online and classroom components) throughout the curriculum, as compared to 47% of students who preferred live lectures solely. Approximately 62% of students find smart phones very or extremely valuable for their academic success. Approximately 66% of students reported using their smart phones and 40% reported using their tablets "always" or "often" during the past

year for academic activities; however, only 34% of students found paper textbooks very or extremely valuable for their academic success, with less than 29% using them "always" or "often." **Implications:** U.S. pharmacy students prefer using some online learning methods to support their learning and academic success. When updating and revising pharmacy curricula, schools of pharmacy should consider the inclusion of technology and online learning methodologies.

The Use of Simulating Sexual History Taking to Enhance Empathy and Professionalism Among 2nd-year Students. Sara A. Al-Dahir, *Xavier University of Louisiana*, Brittany Gorden, *Xavier University of Louisiana*, Jonn C. Bailey, *Xavier University of Louisiana*. **Objectives:** Healthcare students' attitudes toward patients with varying sexual orientations and identities may have a direct influence on their ability to provide pharmaceutical care. The objective of this study is to determine if simulating sexual history taking and offering instruction in counseling patients with different sexual histories and orientations will increase students' empathy when dealing with this varying demographic. **Method:** Students participated in sexual history taking simulation that involved interviewing patients with different sexual orientations and identities in lab. A pre and post-survey on a Likert (1-Strongly Disagree to 5- Strongly Agree) scale drawn from the Social Distance Scale (SDS), The Leeds Attitude to Concordance scale and Attitude Scale assessed their general knowledge and personal attitudes toward patient's with different sexual histories. Student grades on the OSCE for different patient scenarios were also scored. **Results:** There was no change in the students' general attitude and perceptions based on pre and post-test scores (Mean 3.92 vs 3.97, $p = 0.491$). There was a decrease in their pre and post score on the SDS (4.05 vs 3.81, $p < 0.001$). There was no difference in the OSCE scores based upon different sexual orientation of the patient (mean 93% to 99%). **Implications:** This study illustrates that pharmacy students are interested and capable, though not necessarily experienced, in providing patient care to this patient subgroup. Incorporating training in the form of patient assessment labs and cultural competence lectures regarding sexual or gender identity is an area of pharmacy education that should be reviewed for incorporation into the curriculum.

The Valuation and Impact of Residency Training on the Pharmacy Career Continuum. Megan Corsi, *Roseman University of Health Sciences*, Debra Beckstrom, *Roseman University*, Zachery Halford, *Primary Children's Hospital / Roseman University of Health Sciences College of Pharmacy*, Erin L. Johanson, *Roseman University of Health Sciences*, Jaron Halford, *The Utah Medical Education Council*. **Objectives:** To analyze the Utah Medical Education Council's (UMEC) 2015 survey of Utah pharmacy residents and ascertain the utility, benefit and necessity of residency training on pharmacist careers. **Method:** The UMEC sent out a survey to 134 recent Utah residency graduates with a final response rate of 57%. The survey captured information about employment and usefulness of training to current responsibilities. The survey was distributed electronically and was analyzed using descriptive statistics. **Results:** All respondents indicated their practice requires residency training. Only two respondents who completed a PGY-1 residency in Utah were no longer working in a pharmacist related capacity. Nearly 95% of respondents indicated they work in a similar setting as their residency training. Most respondents (90%) agreed that their residency practice site had the available resources necessary to successfully train residents and 69% strongly agreed with this statement. Approximately 75% of respondents currently work in Utah at survey completion. **Implications:** Consistent with recent literature, respondents universally affirmed residency training is required for the setting in which they practice, stating that

residency training is a foundational training necessary for provision of direct patient care. Based on recent resident perceptions, residency training appears to improve employment opportunities as well as provide the necessary skillset to practice in those positions. Former Utah residents also show high job satisfaction with their current employment following residency training. This retrospective analysis can serve as a basis for future studies evaluating the opportunities and overall valuation of residency training on pharmacist career paths focused on direct patient-care responsibilities.

Threading Personal Genomic Testing Across the PharmD Curriculum to Achieve Pharmacogenomics Competencies. Kacey Anderson, *University of Pittsburgh*, Solomon M. Adams, *University of Pittsburgh*, Randall B. Smith, *University of Pittsburgh*, Philip E. Empey, *University of Pittsburgh*. **Objectives:** Pharmacogenomics education is essential in PharmD curricula but it is a complex topic that is challenging to teach effectively and comprehensively in a single course. Our previous work, Test2Learn, employing a participatory education model [student personal genomic testing (PGT)], demonstrated improved student engagement and learning in a pharmacokinetics course. Our objective was to integrate PGT earlier in the curriculum to teach pharmacogenomics in a drug development course (DDI) and thread its use across multiple courses to meet pharmacogenomics curricular competencies. **Method:** Pharmacogenomics competencies were mapped to course objectives and curricular sequence. The previous integration of optional PGT in a year 2 (P2) pharmacokinetics course was adapted for earlier integration in a year 1 (P1) course focused on drug development. PGT-based exercises/data were then used in both courses. Feasibility, engagement, student attitudes, and learning outcomes were measured through participation metrics, objective assessments, and pre/post surveys. **Results:** New science- and application-based competencies were aligned with course objectives. In the new P1 deployment, understanding the pharmacogenomic basis of population variability, ethics, clinical trials, and regulatory guidance were emphasized. Engagement (PGT participation) was high whether deployed in P1 [88% (n=104/114)] or P2 [82% (n=100/122)]. P1 students demonstrated an ability to effectively apply PGx concepts in drug development through written assignments. Student performance on PGx-related exercises and practica in P2 was excellent independent of whether PGT was offered in P1 or P2. **Implications:** Integration of PGT across the curriculum is feasible, highly engages students, and enables threading of pharmacogenomics content to achieve competency-based learning outcomes in PharmD curricula.

To Assess the Impact of an Interprofessional Education Event on Student Pharmacists' Knowledge and Attitudes. Anna Nogid, *Long Island University*, Joseph Nathan, Kathryn Kruse, Harold L. Kirschenbaum, *Long Island University*, Stacy Jaffe Gropack. **Objectives:** To assess the impact of a large scale, live inter professional event on student pharmacists' understanding of IPE and attitudes towards healthcare teams. **Method:** Student pharmacists in their third professional year were among the approximately 600 students from 10 different health profession programs who participated in a live IPE event in November 2015 focusing on the IPEC competency related to professional roles and responsibilities (RR). The event consisted of an introduction, small-group case-study discussions, and a large group debriefing. Students completed, IRB-approved, pre- and post-program evaluations. This report focuses on findings related to student pharmacists. **Results:** The number of student pharmacists who determined that all delineated professionals should be part of the healthcare team increased significantly from pre- to post-test, $X^2(1, n=340, 10.311) p < .01$. Significant increases were identified in students' reported abilities to define interprofessional

education $t(332)=6.148, p < .01$, explain RR of other professionals, $t(332)=6.444, p < .01$, explain similarities in RR among various professionals, $t(332)=6.506, p < .01$, explain differences in RR among various professionals $t(332)=6.705, p < .01$, explain the need to collaborate with other health professionals $t(332)=5.756, p < .01$, and discuss the benefits of interprofessional collaborative practice $t(332)=5.464, p < .01$. There was no statistical change in student attitudes towards interprofessional teams $t(333)=.064, p = .949$, as measured by the "Attitudes towards healthcare teams" scale. **Implications:** A single live IPE event may be effective in increasing student understand of IPE; however, one event may not be sufficient to lead to a change in attitudes.

Two-Phase Pharmacy Skills Laboratory Video Project: Student Reactions and Effect on Lab Performance. Tammy Garren, *Albany College of Pharmacy and Health Sciences*, Lee Anna S. Obos, *Albany College of Pharmacy and Health Sciences*. **Objectives:** Assess pharmacy students' use of and reaction to pre-lab compounding and calculation videos, quizzes, worksheets and the effect these instructional tools had on student performance. **Method:** In phase one, students viewed compounding videos and completed online mastery quizzes prior to lab. Students were allowed multiple attempts to earn a required 100% on the quiz before attending lab. Corrective video feedback linked students to precise video segments containing the answer. In response to student feedback, phase two was developed in which students also viewed calculation videos on three topics: Specific Gravity, Three Bottle Problems, and Stock Solutions. **Results:** When surveyed about their experiences, student response in both phases was positive. In phase one, students scored significantly better on the Suspension compounding assessment during lab than students in the previous year without access to the videos and pre-lab quizzes, $p < .0001$. Scores also rose on the Wet Lab ($M=73.54$) in contrast to the previous year ($M=71.58$). In phase two, students scored significantly better on pharmaceutical calculations quizzes when compared with students in the previous year without access to the videos (Specific Gravity, $p < 0.0001$; Three Bottle Problem, $p = 0.0004$; and Stock Solutions $p < 0.0001$). **Implications:** Pre-lab instruction in the form of videos, worksheets, and online quizzes allows students to view and review techniques in preparation for lab application and exams. The videos preserve valuable class time by eliminating the need for in-lab demonstrations and reinforce learning by providing out-of-class comprehensive examples with practice. The online quizzes also allow instructors to gauge student preparation for lab.

Two-year Assessment of First-year Student Professionalism Prior to Commencement of a Co-curricular Professional Engagement Program. Maria M. Thurston, *Mercer University*, Hazel Lacson, *Mercer University College of Pharmacy*, Rebecca N. Burns, *Mercer University*, J. Grady Strom, *Mercer University*, James W. Bartling, *Mercer University*, Candace W. Barnett, *Mercer University*. **Objectives:** To assess professionalism among first-year pharmacy students at one college of pharmacy prior to commencement of a co-curricular professional engagement program. **Method:** A program to foster and promote professional attitudes and behaviors in pharmacy students was initiated in fall 2014. Students participated in both required and elective activities in the following key areas: development, seminars/events, involvement, community service, and leadership, with a written reflection/projection. Successful participation in the program is a yearly progression/graduation requirement. Prior to starting the program, students completed two validated questionnaires, the Behavioral Professionalism Assessment Instrument (BPAI) and the Pharmacy Professionalism Instrument (PPI) to assess their baseline professionalism level. **Results:** A total of

262 first-year students (86.6%) successfully completed the survey in fall 2014 (n=131) and fall 2015 (n=131). Most students agreed/strongly agreed to the individual statements of the PPI regarding their practice of professional attitudes/behaviors (79.8-98.9%) or rated themselves as very good/excellent regarding statements of the BPAI about exhibiting professionalism (66-97.7%). However, only 14.1% (n=37) of students rated their professional activity level as "leader" or "active member," while the majority (85.9%) classified themselves as an "inactive member" or reported "no involvement." 91.6% (n=240) of students agreed or strongly agreed that a program focused on professional engagement is important and helpful. **Implications:** First-year students have highly favorable perceptions of their own professionalism and acknowledge the importance of professional engagement; however, most are not actively engaged. Providing students with structured co-curricular professional experiences, in compliance with Standards 2016, should be well received by students and may further strengthen their professionalism.

Understanding the Job to be Done by Pharmacy Graduates.

Jacqueline E. McLaughlin, *University of North Carolina at Chapel Hill*, Antonio Bush, *UNC Eshelman School of Pharmacy*, Mollie A. Scott, *University of North Carolina at Chapel Hill*, Philip T. Rodgers, *University of North Carolina at Chapel Hill*, Meg Zomordi, Mary Roth. **Objectives:** The purpose of this research was to identify and describe the core competencies and skills deemed essential for successful pharmacy graduates in today's healthcare system. This work was framed by Clay Christensen's Job to Be Done theory, which challenges us to identify and articulate what our graduates must be prepared to do in the workplace. **Method:** In spring 2015, 120 clinical preceptors, pharmacists, and partners assembled for the School's annual educational symposium. Interviews were conducted with six breakout groups of 15-20 stakeholders each, who engaged in a facilitated discussion about the qualities and characteristics relevant to the success of a pharmacy graduate. Audio from the breakout groups was transcribed and standard qualitative analysis methods were used. Data were analyzed using thematic coding and constant comparative approaches. Multiple coders, peer debriefing, and member checking were used to promote trustworthiness of findings. **Results:** Eight overarching themes detailing qualities and characteristics of the job to be done by pharmacy graduates were identified. Seven themes were derived from Tony Wagner's Seven Survival Skills: critical thinking and problem solving, collaboration across networks and leading by influence, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, accessing and analyzing information, curiosity and imagination. An eighth theme, self-awareness, emerged inductively. **Implications:** This work has provided critical insight into the skills considered requisite for success in pharmacy practice. These results have informed our curriculum transformation efforts and the re-engineering of our experiential education program to better prepare students for the challenges of 21st century healthcare.

Use of Class Facebook Groups to Disseminate Evidence-Based Study Tips.

Gina J. Ryan, *Mercer University*, Jennifer N Brock, *Mercer University College of Pharmacy*, Lori H. Syed, *Mercer University*. **Objectives:** Since social media is widely used by many pharmacy students, it may be a potential mechanism for institutions to connect with their students on a wide variety of topics. The purpose of this project was to determine the effectiveness and students' receptiveness of a college disseminating information on effective study methods through Facebook. **Method:** A total of 11 study tip riddles were posted on Facebook. Each post contained a link that lead to a web page with the riddle answer. Google Analytics data was captured on the riddle

answers' web pages and the Facebook posts were monitored for "likes" and comments. Students' knowledge on effective study methods was collected before and after the Facebook posts. Additionally, students reported their opinion on the posts. **Results:** The average score on the study method knowledge assessment increased by 11% ($p < 0.0001$). Students' ratings of usefulness ($p = 0.46$) and likeability ($p = 0.41$) of the study tips were not significantly different. Between 3.2-39.7% of students accessed the riddle answers. There was only one "like" and one comment on any of the riddle posts. Six of the written responses to the survey were negative and two were positive. **Implications:** Although the use of Facebook to disseminate information about effective study techniques was not well received by the students, this method did increase students' knowledge about this topic.

Use of External Reviews During the Promotion and Tenure Process.

Abigail M. Yancey, *St. Louis College of Pharmacy*, Jamie L. Woodyard, *St. Louis College of Pharmacy*, Matthew Pitlick, *St. Louis College of Pharmacy*. **Objectives:** To evaluate utilization of external reviews by Colleges of Pharmacy (COP) during Promotion and Tenure (P&T) **Method:** A 25-item web-based survey was sent to all Pharmacy Practice Department Chairs. Results were analyzed via descriptive statistics. **Results:** Fifty four of 112 colleges (48.2%) responded to the survey. Of those who responded, 82.4% utilize external review in their P&T evaluation. At the majority of colleges, reviewers are selected from a combination of sources including the candidates' personal list and in most circumstances the P&T chair or Dean of Pharmacy contacts the reviewer(s). At 82% of colleges, the candidate is not allowed any direct contact with the reviewer(s) prior to or during the review process. At almost all colleges, the reviewer(s) receives the candidate's curriculum vitae and specific guidelines for completing the review. A personal statement and a sample of publications chosen by the candidate are sent by 50% or more colleges. All colleges request reviewers to evaluate the candidate's research/scholarship, 80% teaching, and approximately 70% clinical practice, external service, and national standing. A total of 75% of colleges ask the reviewer(s) to make a recommendation regarding the candidate's promotion status and 40% inquire if the candidate would be promoted at the reviewer's institution. At completion, 20% of colleges allow the candidate access to the external review letters or a synopsis of what was included. **Implications:** The majority of COP utilize external reviews. Methods and requirements vary considerably.

Use of Nonfiction Literature to Facilitate a Discussion-Based Palliative Care and End-of-Life Course.

Daniel T. Abazia, *Rutgers, The State University of New Jersey*, Mary M. Bridgeman, *Rutgers, The State University of New Jersey*, Michael Toscani, Lindsay A Brust-Sisti, *Rutgers University*, Alison Brophy, *Ernest Mario School of Pharmacy*, Christina Howlett, *Ernest Mario School of Pharmacy*, Maribel Pereiras, *Ernest Mario School of Pharmacy*, Stacy Hardeo, *Rutgers, The State University of New Jersey*, Pooja Shah, *Ernest Mario School of Pharmacy*. **Objectives:** An aging population and increasing emphasis on end-of-life care necessitates innovative course design to incorporate palliative care education in health professional training. We describe the development of a course in palliative care that uses a nonfiction book on death and dying as a model for curriculum design and discussion-based learning in a school of pharmacy. **Method:** A two credit-hour elective course was offered to third professional year students in the Spring 2014 and 2015 semesters. How We Die, a nonfiction text that examines death in the context of patient anecdotes, was used to facilitate discussion-based learning. Employing a multidisciplinary group of content experts, each chapter served as the basis for weekly, evidence-based topic discussions. Multimodal

assessment included a weekly quiz and blog post, advanced directive writing, and a clinical skills assessment. The course was evaluated using the Student Instructional Rating Survey (SIRS). **Results:** Since Spring 2014, twenty eight students have participated in the course. On a scale of 1 (Strongly Disagree/Poor) to 5 (Strongly Agree/Excellent), the twelve students (43%) who completed the survey rated the following: Instructional methods encouraged student learning (4.83); I learned a great deal in the course (4.87); and, I rate the overall quality of this course as excellent (4.90). **Implications:** Development of a didactic course in palliative and end of life care using discussion-based learning was feasible, well-liked, and encouraged student learning. The course serves as a model of instruction for palliative care in other health professional degree programs or as an opportunity for interprofessional education.

Use of Pre-Recorded Case-Based Practice Problems with a Document Camera in an Introductory Pharmacokinetics Course.

Lydia C. Newsom, *Mercer University*, Reid Proctor, *Mercer University*, T. Vivian Liao, *Mercer University*. **Objectives:** The objective of this study is to determine whether the addition of pre-recorded videos of case-based problems enhances student learning in an introductory pharmacokinetics course. **Method:** In spring 2015, pre-recordings reinforcing concepts from each clinical didactic session were created by faculty using a document camera and incorporated into an introductory pharmacokinetics course. Student viewing of the pre-recordings was voluntary and independent. The impact of the pre-recordings on student learning was assessed through quizzes given before and after pre-recording availability and through a survey assessing student-reported perceptions of learning. Final exam and overall course grades were compared to grades in spring 2014 when no pre-recordings were utilized. Data was analyzed using descriptive statistics and student's t-test. **Results:** Of 153 students, the mean grade for quizzes administered after pre-recording availability was 67.0 ± 11.7 , compared with a mean grade of 81.3 ± 12.4 for quizzes administered prior to pre-recording availability ($p < 0.05$). Despite the lower quiz scores, final exam and overall course grades (86.0 ± 7.6 and 85.9 ± 6.7 , respectively) increased significantly when compared to spring 2014 final exam and overall course grades (77.6 ± 13.3 and 84.0 ± 7.7 , respectively; $p < 0.05$). Over 90% of students perceived the pre-recordings reinforced concepts, improved their understanding, and enhanced their application skills. While the pre-recordings were optional, 89% of students reported viewing the pre-recordings at least once. **Implications:** The use of pre-recordings improved overall student course performance and enhanced students' perception of learning. Further assessment regarding the potential value of pre-recordings is necessary.

Use of Shadow Health Software to Improve Student Communication Skills.

Nancy Borja-Hart, *The University of Tennessee*, Christa George, *University of Tennessee College of Pharmacy*. **Objectives:** To assess students' confidence in using communication skills with a virtual patient and to assess their impressions of this type of interaction. **Method:** This was a retrospective, IRB exempt study. All first year Doctor of Pharmacy students were eligible to take the pre and post survey in the Shadow Health program in Fall 2015. The survey consisted of 33 items addressing confidence in student abilities and impressions of virtual patient software. Items linked to communication skills were evaluated. **Results:** Two hundred and three students out of 205 enrolled completed the pre survey and 163 students completed the post survey. Students' responses of agree/ strongly agree regarding confidence for the following items pre/post were: Understanding of history taking, 30% vs. 52%; Ability

to elicit subjective health information, 39% vs. 59%; Demonstrating empathy for the patient's perspectives and feelings, 75% vs 72%; Ability to document subjective data, 40% vs 66%; Ability to document objective data, 40% vs 65%. Regarding their impressions, students' responses of agree or strongly agree pre/post were: Virtual patients realistically simulate a real patient, 36% vs. 45%; Performing a health assessment can help me learn to obtain a history, 61% vs. 67%; and Ability to reflect on my performance, skills, and assumptions in a meaningful way, 66% vs. 64%. **Implications:** Using standardized patients can be expensive, making alternative methods of teaching communication skills desirable to educators. This virtual patient program improved students' confidence in their verbal and written communication skills. Empathetic skills and student reflection need further evaluation.

Using Debates in a Third-Year Pharmacy Course to Teach Controversy in Pharmacotherapy for Special Patient Population.

Nina Elk, *Fairleigh Dickinson University*, Anna Dushenkov, *Fairleigh Dickinson University*. **Objectives:** The purpose of the debates is for students to learn how to evaluate controversy and to apply their findings to a patient-specific pharmacotherapy problem. As a result, the students will improve their skills in literature search, analysis, critical thinking and communication. **Method:** Eighteen students participated in four debates throughout the semester. Debate instructions, topics, and patient cases were distributed. Debate rubrics and a post-self evaluation survey were used to evaluate student abilities to research, analyze evidence, apply critical thinking, and to communicate effectively. Knowledge of the debate topics was evaluated using pre- and post-debate assessment. **Results:** The mean debate score was 92 out of 100 with a range of 86 to 95. The results of pre- and post-debate assessment demonstrate that most of the students have increased their knowledge by changing and/or gaining an opinion at least once, McNemar's test, $p=0.049$ (2-sided). The mean of the number of reasons in support of an opinion chosen was greater pre-debate (9.8) than post-debate (11.4). The self-evaluation survey response rate was 83%. The results indicated that 93% of the students either agreed or strongly agreed to debate activity improving all of the skills assessed. The mode for all items in the survey was 5 on a 5-point Likert scale. The median for 11 out of 12 survey questions was 5. **Implications:** This debate activity combined with patient-specific pharmacotherapy problem is an effective way to teach students controversy in special patient population. The debates help develop critical thinking and communications skills which are essential for pharmacists.

Using High-Stakes Exams to Assess Advanced Pharmacy Practice Experiences Readiness in an Innovative 2+2 Program.

Rae R Matsumoto, *Touro University California*, Eric Ip, *Touro University California*, Adrian Wong, Junhua Yu, *Touro University California*, Karl Meszaros. **Objectives:** Touro University California has an innovative 2+2 program, comprised of 2-years of didactic training, followed by 2-years of advanced pharmacy practice experiences (APPEs). Given the compressed didactic component of our curriculum, it was essential to develop methods for assessing APPE readiness. The objective of this study was to compare performance on required APPEs, didactic GPA, and two internal high-stakes exams: 1) Pre-APPE Competency Exam (PACE) which tests clinical foundational knowledge using multiple choice questions, and 2) Triple Jump Exam (TJE) which tests the application of foundational knowledge in a clinical case scenario involving a i) closed book portion to test foundational knowledge related to the case, ii) open book portion to assess the ability to utilize library resources to address questions related to the case, and iii) OSCE involving standardized patients. **Method:** Data from the graduating

Classes of 2014 and 2015 were evaluated using parametric statistics. **Results:** Multiple regression revealed that didactic GPA was significantly correlated with PACE ($p < 0.001$) and TJE ($p < 0.001$) scores, but there was no significant correlation between PACE and TJE scores. This indicates that the PACE and TJE are assessing different constructs. Moreover, it confirms that performance during the didactic curriculum is correlated with performance on the high stakes exams, while ensuring that the knowledge is current prior to starting APPEs. Passage of the high stakes exams appeared a reliable indicator of APPE readiness as the mean score for each of the required APPEs was >90 (>70 =passing, >90 =Honors). **Implications:** Passing of internal high-stakes exams are a reliable indicator for APPE readiness.

Using Multiple Peer Evaluation and Ranking to Improve Writing in a Large Pharmacy Practice Class. Peter J. Rice, *University of Colorado*, Mary Seeber, *University of Colorado School of Pharmacy*, Hilda Bi Ndikum, *University of Colorado School of Pharmacy*, Randy Knutsen, *University of Colorado School of Pharmacy*. **Objectives:** Although writing competency can be a key skill in career success, many pharmacy programs struggle with how to encourage good writing, particularly in large classes. Many PharmD candidates do not believe that their writing needs improvement, and most faculty members do not have adequate time to sacrifice to an area outside their scope of expertise. Our objective was to develop a process to provide feedback and evaluation in a large P1 class in Pharmacy Practice Fundamentals and Drug Information. **Method:** We developed and implemented the idea of using multiple peer assessment for our writing assignments using a QA process. We started with the assumptions that: 1) there is such a thing as better writing; 2) better writing will be recognized, particularly when compared with lesser quality writing; and 3) common writing shortcomings can be identified by classmates. Each student reviewed and ranked the papers of eight classmates for each assignment. Students provided peer feedback in the form of ranking, identification of areas for improvement, and comments. Rankings were used to determine part of the assignment grade. **Results:** We have used multiple peer assessment and ranking for two years in our P1 course. Multiple peer assessment with ranking allowed students to recognize the quality of their writing and to receive feedback from classmates. Students reported that the experience allowed them to better judge the quality of their own work and provided ideas and encouragement for improving their own writing. **Implications:** Multiple peer assessment and ranking can encourage writing improvement even in a large class.

Using Standardized Patients to Enhance Students' Learning in a Pharmacology Course. Sarah E Thornton, *UAMS College of Pharmacy*, Kristi Erbach, Courtney Bookout, Bethany Boyle, Ashley N. Castleberry, *University of Arkansas for Medical Sciences*. **Objectives:** To assess the effectiveness and student perceptions regarding the use of a standardized patient encounter on student learning in a basic sciences course. **Method:** Second-year pharmacy students participated in a simulated encounter in a pharmacology course using standardized participants. The case centered on counseling a myocardial infarction patient on their new clopidogrel prescription. Student performance was evaluated using a 14-item checklist focused on counseling points and communication skills. After the encounter, students met in small debriefing groups with upper classmen. An evaluation with Likert scale responses (1=strongly disagree, 5=strongly agree) assessed students' perceptions of the experience using descriptive statistics (mean, standard deviation). The institutional review board approved this research as exempt. **Results:** Students ($n = 113$) completed the patient encounter, debriefing, evaluation, and reflection. According to student

perceptions, the exercise stimulated learning (4.03, 0.87); was stressful (2.93, 1.15); was organized (4.46, 0.77); was challenging (3.34, 0.97) and was useful (4.29, 0.77). Most (95.6%) students agreed the simulation should be used next year in this course. **Implications:** Students in this course found the patient encounter useful to learning and recommended it be used again. To enhance application of foundational knowledge in basic pharmaceutical sciences courses, faculty should consider incorporation of clinical exercises to mimic actual patient encounters.

Using Telehealth Technology to Implement IPE Activities with Prescribing Health Care Professional Students. Kimberley J. Begley, *Creighton University*, Ann M. Ryan Haddad, *Creighton University*, Kathleen A. Packard, *Creighton University*, Kelli L. Coover, *Creighton University*, Karen O'Brien, *Creighton University*, Amy Pick, *Creighton University*, Megan Heidtbrink, *Union College Physician Assistant Program*, Michelle Buller, *Union College Physician Assistant Program*. **Objectives:** Accreditation standards mandate more interprofessional education (IPE) experiences for students, occurring in both the didactic and experiential portion of the curriculum. The objective of this study was to develop and pilot telehealth WebEx IPE case activities with prescribing health care professional students. **Method:** Dispensing and Patient Care is a required course with a laboratory component offered to first through third year pharmacy students. In the fall semester, the instructor for the course and several pharmacy faculty partnered with a nearby physician assistant college to develop interprofessional cases. Using telehealth technology, physician assistant students were paired with pharmacy students and worked through patient cases. Pharmacy and physician assistant faculty were moderators in each virtual room and evaluated students on their recommendations. Pre- and post-Team Skills Scale question scores were compared using paired student's t tests. **Results:** There were statistically significant improvements for all independent Team Skills Scale (TSS) questions after the telehealth WebEx IPE case activities. Overall total scores increased from 60.5 ± 10.3 to 70.3 ± 6.6 , $p < 0.001$. Examining data collected from the school's other IPE events was pre-TSS 66.4 ± 0.4 , post-TSS 72.7 ± 0.4 , $p < 0.01$. In these telehealth WebEx case activities, the students ranked themselves a bit lower at baseline, but this was their first IPE activity. **Implications:** With new accreditation requirements, schools of pharmacy may find it challenging to develop efficient and effective ways to incorporate meaningful IPE experiences into their curricula. This telehealth WebEx IPE case activity was easily integrated into an existing course and improved students' perceptions of their abilities to provide collaborative care.

Using Visits with Simulated Legislators to Improve Pharmacy Students' Advocacy Skills. Christopher Johnson, *Concordia University Wisconsin*, Andrew Traynor, *Concordia University Wisconsin*. **Objectives:** 1) Foster student familiarity with legislative issues and resources; 2) Improve students' communication skills with legislators. **Method:** Students are required to complete the Servant Leadership course during the second professional year at Concordia University Wisconsin School of Pharmacy. This course includes a unit on legislative advocacy. During this unit, students participate in two lectures focusing on current issues and skills in advocacy. Students also participate in a meeting with a simulated state legislator portrayed by a faculty or staff member. Students work in groups of four and are assigned an issue prior to their simulation. Evaluation of student performance is completed by the simulated legislator using an online rubric system. **Results:** A total of 186 students completed simulated hill visits over two years. All students passed the assignment. Notable

components of the rubric where students needed improvement (NI) included: Connection of Issue to Legislator (30% NI), and Wrap-up Response (20% NI). Students performed exceptional in; Identification of the Constituent (30%), Identification of a Problem/Issue (30%), and Response to Questions (25%). **Implications:** Using simulated legislative visits fosters pharmacy students' ability to use legislative resources and familiarize themselves with legislative issues. Simulated hill visits may also be effective in improving student communication skills at visits with their legislators.

Using Reflective Writing to Teach and Assess Health Disparities and Self-awareness Competencies: A Rubric Approach.

Elizabeth Hall-Lipsy, *University of Arizona College of Pharmacy*, Amy Kennedy, *The University of Arizona*. **Objectives:** The Center for the Advancement of Pharmacy Education (CAPE) 2013 Educational Outcomes include health disparities components as well as self-awareness objectives that address metacognition, personal knowledge, skills, abilities, beliefs, biases and emotions. This project integrated these two objectives using reflective writing where students create linkages between what they are learning and what they already know and believe, to achieve learning in both CAPE domains. **Method:** This approach developed 6 reflective writing prompts addressing health disparities topics instead of exams in a discussion-based health disparities elective. The prompts required students to integrate course materials including readings, short lectures and class discussions, with personal experiences on rotations in underserved practice settings. Student satisfaction with the course was assessed and a rubric containing four items for the reflective writing assignments was developed and tested using both course coordinators to independently score student responses. The rubric was evaluated to determine interrater reliability and validity. **Results:** A total of 14 students completed the course. Student feedback regarding the use of reflective writing in the place of exams was very positive. The rubric developed demonstrated high reliability; the rubric scale score included four items ($\alpha = .799$) ($p = .000$). The intraclass correlation coefficient was 0.787, with 95% CI (.559-.924). **Implications:** Reflective writing can be used as a means of assessing student learning in health disparities. Moreover, students can successfully link their past and current learning and experiences to address health disparities competencies and this can be coupled with self-reflection for positive outcomes for both CAPE domains.

Using Team-based Interprofessional Education to Enhance Student Knowledge of Healthcare Professional Roles.

Burgunda V. Sweet, *University of Michigan*. **Objectives:** A large-scale, semester-long interprofessional education course involving 257 students from five health science schools was implemented in 2015. This study evaluated whether a pedagogy that involved collaborative, case-based decision making by interprofessional teams of student learners was effective for teaching the roles of healthcare professionals on the healthcare team. **Method:** Baseline knowledge of student perceptions and knowledge of each profession was assessed using a survey instrument developed by the faculty. Students indicated their level of familiarity with the coursework required for each discipline, the role that each discipline plays on the team, and their likelihood for future collaboration. A 10-question quiz assessed general knowledge of each profession. Throughout the semester interprofessional students teams solved complex patient cases that required collaboration across disciplines. The roles assessment was re-administered in the last week of class. Post-course assessments were compared to baseline scores to determine knowledge gains. **Results:** Learning of professional roles, as assessed by the 10-point quiz, showed significant improvement in

post-course scores vs baseline scores (7.0 +1.6 vs 5.0 + 1.6; $p < 0.0001$). After the course, significantly more students reporting being familiar with understanding the role each discipline has on the team and the education and training required for each discipline ($p < 0.05$). Across disciplines students generally perceived an increased likelihood of future collaboration. **Implications:** Using a case-based pedagogy allowed students to teach each other about their respective disciplines, to learn about the roles each profession plays on the team, and to gain experience in representing the role of their profession.

Utilization of Pharmacy Technicians as Standardized Patients to Enhance Pharmacy Student Communication Skills.

Heidi Eukel, *North Dakota State University*, Jeanne E. Frenzel, *North Dakota State University*, Elizabeth T. Skoy, *North Dakota State University*. **Objectives:** Utilize pharmacy technicians as standardized patients and a "Tell, Answer, Ask, Feedback" framework to enhance students' abilities to respond to patient attitudes and provide clinical information. **Method:** Our University is not associated with a medical center and therefore does not have a standardized patient pool. Pharmacy technicians were recruited to play the role of the patient. Third year professional pharmacy students rotated to 6 different patient stations. Elaborate cases were created with 3 components: pharmacist information, patient information, and facilitator information. Cases were designed to provide guidance if roadblock were encountered and provide structured feedback from the standardized patient's point of view. The patient was given detailed instructions on how to act – in a hurry, upset, resistant to taking medications, etc. This activity contributed 2 hours of simulated IPPE to our curriculum. **Results:** Upon course completion, 59% of students ($n = 69$) strongly agreed and 40 % agreed that the course gave them skills, ideas, or techniques that can be used in the workplace. Students completed an anonymous essay in which they were asked to comment on one outstanding characteristic and one aspect of the activity that needs improvement. Qualitative analysis showed that students valued the feedback from the acting patients, valued getting hands-on practice with actual products, and found meaning in the ability to respond to various attitudes in a simulated environment. **Implications:** Pharmacy technicians are an effective alternative to standardized patient pools and hiring technicians as standardized patients has positive learning outcomes for student pharmacists and technicians.

Utilization of Standardized Patients for Developing Student Pharmacists' Information Gathering Skills.

Sweta M. Patel, *Mercer University*, Sweta M. Patel, *Mercer University*, Angela O. Shogbon, *Mercer University*, Christine M Klein, *Mercer University College of Pharmacy*, Gina J. Ryan, *Mercer University*. **Objectives:** To evaluate third-year student pharmacists' ability and perception of their ability to gather patient-specific data through obtaining relevant information from a standardized patient (SP) interview session. **Method:** During the SP interview session, P3 students were evaluated on their information gathering and communication skills using structured rubrics. Students were assigned points on the information gathering rubric for obtaining pertinent patient-specific information during the SP interview, and were assessed on their ability to perform key verbal and non-verbal communication skills on another structured rubric. Based on the information gathered during the SP interview, students developed a patient-specific assessment, plan and education in a SOAPE note format. Students' perceptions regarding their patient-specific information gathering skills were collected using a retrospective pre- and post-interview survey. **Results:** A total of 161 (98%) students provided informed consent. The average score on the information gathering

and communication skills during the interview sessions were $68 \pm 16\%$ and $79 \pm 14\%$, respectively. Approximately, 88% of students did not ask for two patient identifiers, 30% did not inquire about allergies, 13% did not assess adherence, and 43% did not ask about nonprescription products. The average score on the patient-specific care plan was $67 \pm 16\%$. Students' perception of their overall ability to obtain relevant patient-specific information during the SP interview session improved by 15% ($p < 0.0001$). **Implications:** Use of SP interviews increased students' perception of their ability in information gathering skills. It also highlighted areas for additional and repeated reinforcement to adequately prepare students for experiential education and pharmacy practice.

Utilization of an Immediate Feedback Mechanism in Objective Structured Clinical Examination (OSCE) to Promote Student Learning. Siu-Fun Wong, *Chapman University*, Pamela Mercado, *Chapman University School of Pharmacy*, Albert T. Bach, *Chapman University*, Jason M. Yamaki, *Chapman University*, Viet-Hong Nguyen, *Chapman University School of Pharmacy*, Laura Tsu, *Chapman University School of Pharmacy*. **Objectives:** Research suggested that the most effective way to use feedback in educational settings is to provide specific feedback information immediately after the assessment. Comparative studies between delayed and immediate feedback showed significantly greater improvement in performance for the immediate feedback cohort. Data for health professional skill assessment such as the OSCE are limited but showed the same conclusion. The objective of this study is to evaluate the feasibility of using an electronic assessment platform to conduct OSCE grading and provide immediate feedback. A student satisfaction and learning reflection survey was conducted. **Method:** Six student pharmacists were concurrently assessed real-time using the Analytical Checklist and Global Assessment Rubrics uploaded in ExamSoft™. Categorized performance scores were provided to each student immediately following completion of OSCE. Student pharmacists completed a 4-question post-event survey using Qualtrics™ and provided open comments. **Results:** All 79 students received immediate feedback within 15 minutes after OSCE. Students felt the feedback facilitated their ability to self-reflect on their performances (75.7%) and will improve their future performances (79.5%). Overall, the students felt that feedback will help them no matter whether they passed or failed the OSCE (70.1% vs 75.9%, respectively). Most common student comments: need inclusion of personalized feedback comments, more coaching, and helped "boost confidence" in areas they performed well. **Implications:** Immediate feedback for OSCE is feasible and well-received by student pharmacists. Improvements to be considered: Revision of rubric categorizations to improve on specificity and SLO alignments; explore evaluators' ability to add comments, especially "red-flag" comments, in real-time setting.

Utilizing Student Pharmacists to Improve Medication Reconciliation in a Community Teaching Hospital. Ranjani Varadarajan, *Shenandoah University*, Sarah Parnapy Jawaid, *Shenandoah University*, Dawn E. Havrda, *Shenandoah University*, James S. Green, *Shenandoah University*. **Objectives:** Investigate the effectiveness of Best Possible Medication History (BPMH) process as carried out by 4th year Advanced Pharmacy Practice Experience (APPE) students in a local community teaching hospital. **Method:** Shenandoah University School of Pharmacy partnered with Inova Loudoun Hospital Systems (ILH), to develop an on site training module and curriculum for a medication reconciliation elective APPE rotation. 16 APPE students, once oriented and trained on the BPMH process; collected the medication history, compared data in the patient's electronic health record (EHR)

and identified discrepancies, for all hospital patients admitted from the Emergency Department (ED). The BPMH was then updated in the EHR, prior to medication reconciliation by the physician during admission. A brief pilot program was conducted for 4 weeks in Spring 2015. The main project period ranges from July 27, 2015 to December 15, 2015. **Results:** For the pilot study, 4 student pharmacists interviewed a total of 70 patients. Students needed to verify medication information by contacting the patient's pharmacy or primary care physician for 48% of the patients. Students found at least one prescription medication discrepancy in 79% of the patients; with an average of 3 discrepancies per patient. The main study results will be presented at AACP meeting. **Implications:** This process, while fulfilling a crucial aspect of Accreditation Council for Pharmacy Education (ACPE) 2016 guidelines to facilitate student pharmacists to be practice ready; utilizes them to improve the quality of the medication reconciliation and ultimately aid in optimal patient care and safety.

Web-based Electronic Health Record Program: Pharmacists' Interventions in Medicare Part D Annual Comprehensive Medication Review. MokThoong Chong, *American University of Health Sciences*. **Objectives:** This study was to evaluate the use and cost-effectiveness of a web-based Electronic Health Record (EHR) program used by the pharmacists to perform medication review for Medicare Part D Beneficiaries over a period of two years. **Method:** Eligible Medicare Part D Beneficiaries were identified and enrolled. A sophisticated Electronic Health Record Program which had the capability to extract and integrate clinical and administrative data from a variety of disparate sources was used. The pharmacists were able to assess medication use by accessing to laboratory, pharmacy, diagnosis, procedure, and patient information. A post-review summary was provided to the medical provider which included a medication action plan. Data were collected and assessed at 3, 6, 9, 12 and 24 months after the review. **Results:** Of the one hundred sixty three (163) Medicare Part D Beneficiaries, pharmacists' interventions were recommended to forty five percent (45% or 74/163) of the participants. At 3 and 24 months, it showed that medical providers had implemented the pharmacists' interventions in twenty percent and eighty two percent of the participants respectively. The study also revealed that the most common medical conditions required interventions among this patient population included central nervous system, cardiovascular and endocrine disorders. **Implications:** The study demonstrated that such web-based EHR system was a very useful and cost-effective tool in reviewing medication use. It helped to enhance patient safety, reduce healthcare cost and improve quality of life.

Theoretical Models

'Ready+4' PharmD: Collaborative Efforts of Admissions and Curriculum Committees to Enhance Student-centric Pharmacy Education. Laura H. Waite, *University of the Sciences*, Grace L. Earl, *University of the Sciences*, Tyan F Thomas, *University of the Sciences*, Laura A. Mandos, *University of the Sciences*, Diane W. Morel, *Philadelphia College of Pharmacy*, University of the Sciences, Lisa A. Lawson, *University of the Sciences*. **Objectives:** To transform a traditional 0-6 PharmD program into a more student-centric, flexible, and personalized pathway to becoming a pharmacist. **Method:** Given changing demographics, declining applications, and the rigidity and unforgiving nature of a condensed 0-6 program structure, faculty admissions/curriculum committees collaboratively evaluated and revised program admissions and curriculum requirements to provide greater flexibility for students, enhance transfer credit; 'friendliness', reduce stress and enhance personalization opportunities for students.

The new curricular model accounted for the results of environmental scans, a comprehensive review of PCAT and recruitment/retention/progression data, new ACPE Standards, and feedback from accepted students who did not matriculate. **Results:** Development and approval of a 'Ready + 4' curricular model, with 'readiness' defined by completion of pre-requisites for the professional phase and university-mandated general education. This model features greater flexibility in course selection to fulfill pre-requisites, multiple admissions pathways including both guaranteed and competitive placement, revised PCAT score expectations for external transfer students, and a 'post-bac track' to expand eligibility for financial aid. **Implications:** The implementation of a 'Ready + 4' model (fall 2016) enhances flexibility for direct entry (from high school) students and adds opportunities for personalization (minors, study abroad, or undergraduate research) prior to entering the professional phase of training. Professional class diversity is increased, students will be better prepared and more likely to complete the professional phase of the program on time and more satisfied with their experience, training and decision to enter the pharmacy profession.

Development of an Inventory Management System within a Dominican Republic Medical Clinic Pharmacy. Gina M. Prescott, *University at Buffalo, The State University of New York*, Alyssa M. Nobel, Christopher Daly, *University at Buffalo, The State University of New York*. **Objectives:** To develop a medication management system in the Dominican Republic (DR) to resolve potential drug stock out concerns, promote patient medication access, and comply with pharmacy certification. **Method:** A medical clinic in the DR asked for assistance in developing a pharmacy inventory management system. Two faculty experienced in inventory management/global health and one student designed a paper perpetual inventory management system using Excel eight weeks prior to in-country implementation. Components included: a log book, an expiration date classification system, and a policy and procedures manual. During a 7 day global health experience, 8 students and 2 faculty implemented the system: 1) medications were reorganized and inventoried, 2) non-formulary medications were accounted for and 3) new standard operating procedures were presented to the medical staff to maintain sustainability of the project. **Results:** Two hundred twenty-four different medications were inventoried. Expired medications were disposed of and soon-to-expire medications were donated to a local hospital. The medical clinic is now able to monitor drug inventory before a stock out occurs, procure those medications in short supply, provide medications consistently for a projected increase in new patients, and comply with accreditation standards in the DR due to its improved organizational structure and work flow. **Implications:** Lack of medication management systems are common in low and middle income countries. Through university resources, we were able to assist with resolving a global health pharmacy issue to enhance patient care and prevent potential drug stock outs in the DR. Future directions include computerization of the pharmacy.

Effectiveness of Creating Video Commercials as a Course Project on Student Learning Outcomes. Farnoosh Zough, *Loma Linda University*. **Objectives:** Standard educational approaches have focused on delivering the learning objectives to students in a timely manner. Engaging students in the teaching process significantly increases the retention and application of the acquired knowledge. The prevalence of technology is evident in the younger generation and can be exploited to improve learning outcomes. This study aims to evaluate the effectiveness of students' learning experience with the use of multimedia technology in creating a video commercial on an Over The Counter (OTC)

product. **Method:** The learning outcomes were obtained from the Center for the Advancement of Pharmacy Education (CAPE). A total of 240 first-year pharmacy students enrolled in Pharmacist-Guided Self-Care from 2013 to 2015 were randomly assigned in groups of two to create a one-minute video commercial on an OTC product. A grading rubric based on content and media was provided. The commercials were played in the classroom and the students were asked to evaluate them on several bases such as professionalism, clarity, content, and creativity. **Results:** Based on the anonymous course evaluation responses, majority of the students perceived the video project as a useful tool in improving collaborative communication and peer-to-peer teaching. Students appreciated the opportunity to work with each other and gain confidence in public speaking. Some students commented that the project was memorable; however, making a video was very time consuming and more points should be allotted. **Implications:** Given the positive feedback, it may be appropriate to make recommendations about possible inclusion of such activity in a standard syllabus for the course.

Implementation of Interprofessional Education in a 3-year Doctor of Pharmacy Program Curriculum in Rural Appalachia. Donna M. Adkins, *Appalachian College of Pharmacy*, Charles Breese, Sharon Deel, Brent Gravelle. **Objectives:** An interprofessional education component of the curriculum at the Appalachian College of Pharmacy, developed in collaboration with the University of Pikeville (Colleges of Osteopathic Medicine, Nursing, and Social Work) and Frontier University (Nurse Practitioner Program), provides students the opportunity to learn with, from, and about other disciplines. **Method:** Small groups were formed with students from each discipline and a faculty facilitator. Students discussed their discipline's role in the healthcare team. Then, students were given a patient case specifically designed to foster discussion and problem-solving among members of the group. The groups were then all brought together to discuss their interactions with each other and how they managed the case. Pre and post perception data was collected to assess the student's interactions. **Results:** There were many positive comments from students of all disciplines. Many learned that reality is very different than the stereotypes and other disciplines can contribute more than they expected. Pharmacy in particular showed large improvements in perception, especially among student physicians and student nurses, in all surveyed categories following the activity ($p < 0.05$). Student comments demonstrated that pharmacy needs to improve its image in the healthcare system, since most students only thought of pharmacists in the traditional distributive role. **Implications:** Interprofessional experiences such as these foster students understanding of the unique role of each discipline in the healthcare team. Well-constructed interprofessional experiences can serve as a method of introducing and fostering a team-based approach to patient care and develop the ability to work with other disciplines in a non-threatening environment.

Instilling Empathy in Student Pharmacists Through an Elective Lifestyle Modification Course. Rebecca Waite, *D'Youville College*, Kirsten H. Butterfoss, *D'Youville College*. **Objectives:** To design an elective course that prepares students for advising patients on lifestyle modifications with empathy. **Method:** In addition to pharmacotherapy, lifestyle and non-pharmacologic options play a role in preventing and managing many chronic disease states. A two-credit elective course was designed to complement the required pharmacotherapeutics courses to provide additional preparation and resources for student pharmacists. **Results:** Student team presentations were planned on a variety of topics including macro and micro molecules; food sources, food industry and food design; popular diets and dietary practices;

effect of food, smoking, and tanning; global issues related to food; and various forms of exercise. To develop student empathy for lifestyle changes, short-term projects were designed for students to undergo three dietary and two physical activity changes of their choosing. Student reflections of the experiences included rationale for selection, challenges faced, how patients might struggle with similar changes, and advice they might provide to their patients undergoing these changes based on their own experiences. **Implications:** An estimated 45 million Americans diet each year and spend billions annually on weight loss products. Pharmacists have extensive access to patients and can play an important role by providing valuable information to them and directing them to appropriate resources in these matters. This is reflected in the development of the “health and wellness” core competency in the 2013 CAPE Education Outcomes. By temporarily attempting the same changes their patients may have to make during this course, students can better empathize with their patients and develop recommendations for making these transitions easier.

Integration of the Pharmacists’ Patient Care Process to the Pharmacy Curriculum. Wanda T. Maldonado, *University of Puerto Rico*, Edna N. Almodovar, *University of Puerto Rico*, Frances M. Rodriguez, *University of Puerto Rico*. **Objectives:** Describe how the Pharmacists’ Patient Care Process is conceptualized and incorporated within academic experiences offered throughout the Doctor of Pharmacy curriculum. **Method:** Various strategies were used to incorporate the pharmacists’ patient care process into the curriculum. The concept of comprehensive medication management was previously contextualized to pharmaceutical care, which is an integral component of the curriculum. Upon the release of the consensus statement for the Pharmacists’ Patient Care Process, the theoretical foundations of pharmaceutical care, comprehensive medication management and the pharmacists’ patient care process were addressed by the faculty. This provided the basis for the development of a plan for the integration of the patient care process throughout the academic experiences. The patient care process is conceptualized in didactic courses as well as in practice experiences in a longitudinal manner. The integrative seminars, which are offered each semester from the first to the third professional years, are the unifying center of the curriculum, and play a key role in this integration. **Results:** The integration of the patient care process transitions from didactic courses to introductory and advanced pharmacy practice experiences. The patient care process is contextualized to the provision of patient-centered care in the ambulatory and acute care setting. The concept is also contextualized to the principles of pharmaceutical care and medication management services. **Implications:** This longitudinal integration within the curriculum provides the students a consistent and common framework for the conceptualization of the pharmacists’ patient care process as the basis for the delivery of pharmacist provided patient care.

Taking Career Day to the Next Level: A Pharmacy Laboratory Field Trip for Grade School Children. Jaime Riskin, *Nova Southeastern University*, David Mastropietro, *Nova Southeastern University*, Brian Hierholzer, *Nova Southeastern University*, Jennifer Steinberg, *Nova Southeastern University*, Andrea Levin, *Nova Southeastern University*, Sara M. Eltaki, *Nova Southeastern University*. **Objectives:** An interactive three-hour laboratory-based experience was implemented for grade-school children to expose them to various areas of pharmacy practice. The main objectives were to promote awareness of the profession, and to serve as a prototype for future college recruitment efforts. **Method:** After a brief discussion and overview of the profession of pharmacy, students rotated through three stations: blood pressure, compounding, and nutrition. Pharmacy faculty and

fourth-year rotation students set up and ran each station. Activities included hands-on blood pressure measurement, compounding a lip balm, solving pharmaceutical math, and discussing healthy eating habits. Each setup was designed to connect students with the profession through hands-on demonstration or exploration of their knowledge through verbal communication. **Results:** Students were informally polled at the start of the event for their perspective of the profession of pharmacy. Most answers reflected the conventional view of pharmacists as dispensers. Following the experience, students were asked again and their responses ranged from teaching patients how to be healthier to making sure patients know how to take their medication. **Implications:** Feedback from the grade school administration was positive and they plan to incorporate the field trip into the curriculum as an annual event. The potential for this type of event to be targeted to students of various ages and education levels and utilized for future recruitment endeavors will be further explored.

Teaching Health Literacy and Education/Promotion Theories through Student-created Public Health Posters. Linda K. Ohri, *Creighton University*, Shana Castillo, *Creighton University*, Jennifer K. Hunt, *Creighton University*, Jessica M. Prior, *Creighton University*, Christa M. Wilson, *Creighton University*. **Objectives:** The common objective of a required P3 Public Health course and an Operation Immunization (OI) student leadership group was teaching students skills in health education and promotion. An Immunization Poster contest for P1 – P4 pharmacy students was initiated during the 2014-15 academic year, and repeated in the 2015-16 year. In the second year, the required Public Health course also utilized a poster assignment to apply health literacy and health education / promotion theories. Pre-teaching was provided on Health Belief and “Stages of Change” Models, and on Social Learning Theory. The Health Literacy focus was on making public health messages appropriate (relevant to the target population), actionable (focus on behavior), and easy to understand (plain language). **Method:** A standardized rubric was used. Four OI leaders and 2 faculty mentors scored anonymous immunization poster contest submissions. Course students submitted posters on immunization or other public health topics, with instructor scoring. **Results:** Students submitted 27 and 68 immunization posters, respectively, in the first and second years of the contest. Contest winners earned prizes, as well as an opportunity to have their posters displayed by a partner immunization coalition. In the course, 116 immunization posters were submitted, and 50 students submitted posters on 17 other Public Health topics; Examples: Exercise, Nutrition, Smoking, Heart Health, Diabetes. **Implications:** Student poster construction fosters development of health literacy skills and educational theory application, while offering a fun and creative experiential learning opportunity. Further orientation will be developed to enhance scoring consistency. Scoring results and student feedback will be presented.

Theoretical Model of the Use of SimScope© within a Pharmacy Curriculum to Teach Physical Assessment. Stanley Snowden, *California Health Sciences University*, Hayley M. Shuman, *Giovauna Alberre, California Health Sciences University*, Asim M. Abu-Baker, *California Health Sciences University*. **Objectives:** To describe a theoretical model regarding the incorporation of simulation technology, SimScope© (Cardionics), to teach and assess physical assessment techniques in a Doctor of Pharmacy program. **Method:** A PubMed search was conducted by the research team. Original research articles which focused on simulation technology to teach physical assessment in the pharmacy, medical, nursing, and allied health field’s education literature were evaluated. References from each research article were

reviewed for additional literature. **Results:** Pharmacy students will be taught physical assessment skills starting their first year and throughout the curriculum. First year will consist of stand-alone physical assessment courses to teach basic techniques. First and second years will consist of abnormalities being discussed in pathophysiology courses. Second and third years will consist of using these techniques to assess pharmacotherapy during therapeutics courses. At the end of their third year, students will complete a capstone objective structure clinical examination (OSCE) to assess a patient's disease state and pharmacotherapy. The SimScope®, which electronically stores cardiac, pulmonary, and abdominal sounds within the stethoscope, will be used at each point to teach, reinforce, and assess these skills. This will be done through the use of workshops, interactions with standardized patients, and OSCEs. **Implications:** This model can help answer questions related to student satisfaction, competence, confidence, and perceived necessity of physical assessment in comprehensive medication management. It can generate new ways of teaching and assessing pharmacy students' abilities to assess patients' pharmacotherapy because of the versatility of the SimScope® to mimic pathophysiologic sounds in otherwise healthy standardized patients.

SOCIAL AND ADMINISTRATIVE SCIENCES **Completed Research**

A New Public Policy Partner: The Department of Insurance. Carriann E. Richey Smith, *Butler University*, Annette McFarland, *College of Pharmacy and Health Sciences*, Jane M. Gervasio, *Butler University*. **Objectives:** Identifying opportunities for students and faculty to engage in public policy and population health can be difficult. The objective of this innovation was to engage students and faculty with the state's Department of Insurance (DOI). The goal for the Department of Insurance was a more conscientious review of marketplace formularies for potential discrimination against patients with certain medical conditions. **Method:** Regular meetings in person and by phone were used to provide the DOI with information on how formulary restrictions can impact patients and pharmacists. In this state the department's background is primarily actuarial science and public policy. Therefore, they lack a background in medicine or pharmacy. A university innovations grant was awarded to provide stipends to students and faculty to develop tools to assist the DOI with responding to complaints and evaluating formularies. **Results:** Eight students and seven faculty members developed tools to evaluate clinical appropriateness of marketplace formularies for multiple diseases. Students expressed an increased appreciation for the complexity of formulary design and regulatory review. Student and faculty were enthusiastic to work on a project that impacted population health in their state. Faculty especially expressed interest in also improving coverage that may benefit patients and community pharmacists. The DOI plans to begin utilizing these tools in 2016. **Implications:** A successful partnership between the DOI and the College of Pharmacy provides policy opportunities for faculty and students. Other states and colleges of pharmacy should consider a similar relationship to benefit regulators, faculty, pharmacists, students and patients.

A Cost- and Meta-analysis of the Effectiveness of the Flipped Classroom in Pharmacy Education. Christopher Gillette, *Marshall University*, Michael Rudolph, *Marshall University*, Nicole Rockich-Winston, *Marshall University*, Craig A. Kimble, *Marshall University*, Kimberly A. Broedel-Zaugg, *Marshall University*. **Objectives:** To examine: published evidence examining the effectiveness of the flipped classroom in pharmacy education and conduct a cost analysis of the flipped classroom in pharmacy education. **Method:** This study

included experimental and observational studies through searches of PubMed, ERIC, and Google Scholar. Studies were eligible for this review if: (a) the study compared traditional lecture to flipped classroom; and (b) one outcome measure was final course examination or final grade. Studies that examined student outcomes for courses that were less than eight weeks were excluded. **Results:** A total of nine studies met the inclusion criteria. The average weighted effect size of the flipped classroom in pharmacy education was calculated to be 0.09 on final exam scores. Using 2015 faculty salary estimates from AACP and previous research, we found that developing a traditional lecture course would cost approximately \$12,930 while developing a new flipped classroom course would cost approximately \$20,683. Approximate costs to maintain a traditional lecture course would be \$7,500 annually while maintaining a flipped classroom course would be \$12,000 annually. To implement the flipped classroom curriculum-wide, schools would have to hire an additional 1.75 FTE dedicated to instruction to maintain current research and service requirements. **Implications:** The flipped classroom has shown mixed effectiveness in pharmacy education, but is associated with higher personnel costs. The costs presented are conservative estimates by not accounting for fixed costs, such as increased technology requirements. More research needs to be conducted before widespread adoption of the flipped classroom based on limited effectiveness and high costs.

An Educational Strategy to Enhance the Interprofessional Learning Readiness of Pharmacy Students. Stephanie M Coley, *Union University*, Sean R. King, *Union University*, Erica Rogers. **Objectives:** The purpose of this investigation was to evaluate the impact of an educational intervention, based on social cognitive theory (SCT), on enhancing readiness for interprofessional learning, situational perception, outcome expectations, outcome expectancies, self-efficacy and behavioral capability of third-year pharmacy students. **Method:** This SCT-based intervention employed a pretest-posttest control group design. The intervention was administered to third-year pharmacy students (n=44) as part of a required Patient Assessment course. Pre and posttest data were collected one week prior to and one week following the delivery of the SCT-based educational intervention to the experimental group. Second-year pharmacy students (n=47) served as the control group. **Results:** The two groups did not differ in the distribution of demographic or SCT variables at pretest. Analysis of covariance (ANCOVA) revealed significant differences between the groups on readiness for interprofessional learning ($p=0.000$), situational perception ($p=0.004$), outcome expectations ($p=0.002$), outcome expectancies ($p=0.020$), self-efficacy ($p=0.008$), and behavioral capability ($p=0.001$). **Implications:** The findings of this investigation provide evidence that readiness for interprofessional learning, situational perception, outcome expectations, outcome expectancies, self-efficacy and behavioral capability are modifiable among pharmacy students through an educational intervention. These results may assist other schools of pharmacy in their efforts to incorporate interprofessional education into their curricula. The intervention may be modified and implemented in advanced pharmacy practice experiences, residency programs and continuing education programs. The value of using a theoretical approach to focus attention on important concepts and skills to create a more efficient interprofessional learning process requires further evaluation.

An Instrument to Measure Professional Engagement. Benjamin D. Aronson, *University of Minnesota*, Kristin K. Janke, *University of Minnesota*. **Objectives:** To describe the initial psychometric evidence for the Student Pharmacist Inventory of Professional Engagement (S-PIPE), an instrument to assist in understanding student professional development. **Method:** The S-PIPE was constructed using iterative

inductive and deductive item development, several pilot administrations, expert review, and cognitive interviews. In May 2015, the 24 potential items of the S-PIPE were administered electronically to 164 first year student pharmacists. Eight flagged items were removed due to poor performance. An exploratory factor analysis was performed using principal axis factoring extraction and Promax rotation. Factor scores on engagement subscales were compared to self-reported involvement and demographic characteristics using bivariate correlations and Mann-Whitney U tests. **Results:** A 3-factor solution was determined optimal, accounting for 70.7% of the variance in the data. The factors were named Belonging ($\alpha=0.942$, 9 items), Connectedness ($\alpha=0.864$, 3 items), and Meaningful Experience ($\alpha=0.760$, 4 items). All 3 subscales were significantly related to level of involvement in professional activities and organizations ($r=.369$, $.370$, and $.291$, $p<.001$). Engagement did not differ by age or campus attended. There were significant differences in Meaningful Experience by gender ($p=0.006$), and in all subscales by pharmacy work experience ($p=0.013$, 0.003 , and 0.008). **Implications:** This study provides initial evidence for the S-PIPE, which can be used to evaluate professional engagement in student pharmacists and the effects of educational interventions. Future studies can further explore the correlates (e.g., experiences, involvement) and outcomes (e.g., grades, professionalism, development) of professional engagement.

Analysis of Student Attrition at the University of South Florida, College of Pharmacy. Heather MW Petrelli, *University of South Florida*, Natasha Baloch, *University of South Florida, College of Pharmacy*, Amy H. Schwartz, *University of South Florida*, Debbie L. Fratus, *University of South Florida, College of Pharmacy*, Nazach Rodriguez-Snapp, *University of South Florida*, Kevin B. Sneed, *University of South Florida*. **Objectives:** This analysis specifically investigated the relationship between academic interruption and factors impacting student performance including admissions characteristics, education level, and the number and types of early alerts. Early alerts are part of an Intervention System by which faculty, staff or students may submit a referral as an issue of concern related to academic, professional, personal, or emotional difficulties **Method:** A de-identified 5-year longitudinal student database from 2010-2015 was utilized. 418 students were included in the analysis. A total 12 students were excluded from the study, who withdrew, took leave of absence (or then withdrew), or were dismissed. Descriptive statistics and scatterplots on all variables were conducted. Pearson Product-moment correlation coefficient analyses were conducted to explore relationships between independent variables and student attrition. Finally, an independent t-test was conducted comparing the number of early alerts between students held back and not **Results:** Results indicate statistically significant ($p<.05$) positive relationship between students held back and those with interview concerns ($r=.1215$) and number of early alerts ($r=.4791$). There were more professionalism and academic progress early alerts in those held back. Early alerts were more prevalent in the spring semester. High school diploma was the highest degree earned for 33% of both those held back and not. However, 4 out of 5 held back in the class of 2018 had a HS diploma. **Implications:** Recommendations include further trend analysis to determine specific type of interview concern and early alerts, analysis of program components to determine contributing factors, and implementation of comprehensive student success plan.

Applying College Choice Theory to Student Selection of a Pharmacy School: A Qualitative Study. Diane B. Ginsburg, *The University of Texas at Austin College of Pharmacy*, Patricia A Somers, *The University of Texas at Austin College of Education*. **Objectives:** The goal of this study was to determine if the Pharmacy College Choice

process (PCC) used by prospective pharmacy students followed other college choice models (including Hossler and Gallagher's three-phase model) and identify the primary and secondary factors that influence final choice. **Method:** A qualitative methodology was employed to understand the phenomenon of PCC from the perspective of students who had just gone through this experience. This study examined the college choice process at four Texas institutions. This research sought to understand the lived experience of students selecting a college of pharmacy by inquiring 1) what is the college decision-making process for pharmacy students, 2) how do students select a school of pharmacy to attend, 3) what factors influence students' choice of a pharmacy program to attend at different types of institutions. **Results:** Four composite themes emerged from the data and include institutional characteristics, financial aspects of the program, influence, and admission process. The themes represented a compilation of codes and factors associated with the PCC process and are consistent with factors derived from college and graduate school choice literature and my conceptual framework. The themes and factors relate to the research questions guiding this study. The results support the application of Hossler and Gallagher's three-phase model for PCC. The one notable difference was the influence the admissions experience had on the student's choice of a program. **Implications:** This study provided important information on how prospective pharmacy students conduct the PCC process and the factors that directly influence their decision on a program.

Are Graduate Pharmacists Ready to Provide Competent and Confident Care for Prescription Drug Misuse Patients? Lawrence B. Staubach, *University of Wyoming*, Lisa J. Ohnstad, *University of Wyoming*, Antoinette K. Brown, *University of Wyoming*. **Objectives:** The objective of this, descriptive study was to understand whether University of Wyoming School of Pharmacy (UWYOSOP) curriculum prepared fourth year pharmacy students via formalized didactic (years 1-3) or experiential (year 4) training in the UWYOSOP curriculum to successfully provide competent, confident, and willing care for patients suffering from prescription (Rx) drug misuse. **Method:** A 20 question survey, utilizing Likert-like questions, was administered to fourth year students who had completed two-thirds of their fourth year rotations. Descriptive statistics were performed on survey results. **Results:** A total of 38 students participated. 61% of students reported Strong Agreement or Agreement (SA/A) that they had the opportunity to counsel patients with Rx misuse. Only 55% of students reported SA/A with having been given opportunities to use motivational interviewing to engage patients with Rx misuse. While 76% of students reported SA/A with having had formal didactic training in Rx drug misuse during years 1-3 in pharmacy school, only 40% of students reported SA/A with having had formal training on rotations regarding Rx misuse. 40% and 42% of students expressed SA/A that they felt competent and confident, respectively, to intervene with patients demonstrating Rx misuse. **Implications:** These results show significant curricular gaps in the readiness of UWYOSOP graduates to proactively address Rx drug misuse in our communities. Based on these results and the gravity of the public health issue, the UWYOSOP has initiated a curricular review to address the didactic and experiential gaps identified in this study.

Assessing Course and Instructor Evaluations: Reducing Item Redundancy to Optimize Student Feedback. Rosalyn P. Vellurattil, *University of Illinois at Chicago*, Marieke D. Schoen, *University of Illinois at Chicago*, A. Simon Pickard, *University of Illinois at Chicago*. **Objectives:** Burden on students to complete course and instructor evaluations in team-taught courses is high. Often, because of the

many requests and number of items on the evaluation, students do not complete them consistently or effectively. The objective of this study is to assess item redundancy and decrease respondent burden of the course/instructor evaluation forms in order to inform programmatic improvement decisions. **Method:** Course and instructor evaluations were recently updated by the curricular assessment committee and piloted in spring of 2015. Psychometric analysis was performed to evaluate item redundancy and reliability. Cronbach's alpha and item-item correlations were used to guide selection of the items, where correlations above 0.7 and minimal change in alpha suggested the item was redundant. **Results:** Three courses (two core, one elective) were piloted using an 11-item instructor and 17-item course evaluation. A total of 398 students completed the instructor evaluation, and 234 completed the course evaluation. Analysis found four items were redundant on the instructor version, and 7 items on the course evaluation. These items were subsequently removed from the evaluations, resulting in a 7-item instructor and 10-item course version. **Implications:** Psychometrics can be used to inform quality improvement in the curriculum. In particular, reliability and correlations can reduce survey item redundancy and result in decreased student survey burden. Benefits to faculty include targeted feedback useful for improved teaching as well as promotion and tenure.

Assessing the Impact of Applying a Learner-centered Model on the Knowledge of Biostatistics among PharmD Students. Amany Hassan, *D'Youville College*, Timothy Hutcherson, *D'Youville College*, Stacie J. Lampkin, *D'Youville College*. **Objectives:** To evaluate the knowledge and perceptions of PharmD students after the implementation of enhanced biostatistical training using a learner-centered model. **Method:** Active-learning sessions were incorporated into the curriculum providing hands-on experience in managing datasets and performing analyses using Excel®. Additionally, sessions focused on individual biostatistics topics in journal articles were incorporated into the Evidence Based Medicine course to discuss the application of advanced statistical methods. To assess students' knowledge, several tests were administered before and after implementation of activities. An online survey was used to assess the students' perceptions about their level of confidence in applying and interpreting statistical analyses and general attitude. **Results:** The average of the baseline test increased from 43.0% to 81.4% after training. Almost 68% of students agreed they can assess the literature based on the appropriateness of statistical tests used, 64% were more confident they can manage and clean datasets, 56% were confident that can perform descriptive statistics. There was a significant association between total score in the final test and positive perceptions ($p=0.014$), and confidence in interpreting results ($p=0.003$). Interestingly, those who thought they will not use these skills in the future had significantly lower perceptions with regards to understanding and usefulness of the material compared to those who thought they would use biostatistical knowledge in their future practice (83.9% vs. 25.0%, p -value <0.001) **Implications:** Allowing more application of biostatistical skills has resulted in improved knowledge and perceptions among students. Educators need to emphasize the importance of biostatistical knowledge in the modern pharmacy practice.

Assessment of Communication, Barriers, and Impact of the AACP Leadership Development Special Interest Group. Whitney Maxwell, *South Carolina College of Pharmacy*, Kerry K. Fierke, *University of Minnesota*, Lindsey H. Welch, *The University of Georgia*, Dana E. Thimons, *American Association of Colleges of Pharmacy*. **Objectives:** This study assesses communication within the AACP Leadership Development (LD) Special Interest Group (SIG), evaluates

member awareness, quantifies the impact on SIG members' professional growth, and characterizes barriers to communication. **Method:** An electronic survey was distributed to 868 members of the LD SIG. Respondents described the number of SIGs involved in, level of involvement with the LD SIG, level of awareness of and utilization of the LD SIG website, number of LD SIG newsletters received, and any barriers to communication. Members were also asked to rate their level of awareness resulting from LD SIG communications and the level of impact of the LD SIG on their professional growth. **Results:** There were 100 responses to the member survey, with a response rate of 11.6%. Statistically significant positive correlations between website use level and member awareness ($p<0.0001$) and impact on professional growth ($p<0.0001$) were identified. Level of SIG involvement was also positively correlated with awareness ($p<0.0001$) and impact scores ($p<0.0001$). Number of SIGs involved in and awareness were also positively correlated ($p=0.02$). Primary involvement in the LD SIG was significantly associated with impact on professional growth ($p=0.0002$). Thirty-seven percent of respondents identified the presence of a communication barrier, and there was a positive relationship between level of LD SIG involvement and barrier identification ($p=0.01$). **Implications:** The LD SIG executive team could use these data to identify optimal communication methods and review and remove barriers for members.

Assessment of Student Self-care Counseling Skill Progression Across a Semester. Stephanie M. Cailor, Aleda M. Chen, *Cedarville University*, Thad Franz, *Cedarville University*, Phillip Thornton, *Cedarville University*, Jeb Ballentine, *Cedarville University*. **Objectives:** To assess the progression of student self-care counseling skills across 9 weekly counseling sessions in a pharmacy practice skills lab. **Method:** P1 students took a 3 credit hour self-care course during the fall 2014 semester. After they learned a self-care topic, the following week they practiced counseling on the topic in a pharmacy practice lab with a P2 student evaluator. The P2 student evaluator then provided formative feedback using a rubric. The 10-item, 4-point Likert-type rubric (1=Unsatisfactory, 4=Commendable, Cronbach's alpha=0.792, score range=10-40) was utilized across 9 counseling exercises to evaluate student patient interaction and self-care counseling skills after IRB approval. Changes from Week 1 to 9 as well as changes across all 9 sessions were analyzed using a Wilcoxon and a Friedman test, respectively. **Results:** Student total scores significantly improved from Week 1 (30.03 ± 7.11) to Week 9 (36.29 ± 6.60) as well as across all 9 sessions ($p<0.001$). Student scores significantly improved on all individual items from Week 1 to Week 9, with the exception of pharmacologic treatment suggestions, which remained at the satisfactory level. **Implications:** Giving students the opportunity to practice their self-care counseling skills after learning the relevant content in the prior week improved their ability to perform self-care counseling at the end of the semester. Since self-care counseling is an important part of pharmacy practice, incorporating many opportunities to practice may be beneficial.

Assessment of the Effect of Communication Skills Training on Communication Apprehension in Pharmacy Students. Connie F. Rust, *South College*, William M. Gentry, *South College School of Pharmacy*, Brian D. Esters, *South College School of Pharmacy*. **Objectives:** Communication apprehension (CA) has been identified as a common concern among first year pharmacy students. Although studies indicate that interventions involving cognitive training have been shown to positively impact CA in pharmacy students, there has been little research into the impact of communication skills training on levels of CA. The aim of this research was to explore the question

“Does communication skills training offered in an active learning, didactic coursework setting affect communication apprehension in first year, first quarter pharmacy students?” **Method:** The Personal Report of Communication Apprehension (PCRA-24) was administered at the beginning and completion (pre-post) of a skills-centered communication course to first year, first quarter pharmacy students (n=58). IRB approval was obtained through South College School of Pharmacy Institutional Review Board. **Results:** Analysis of paired samples t-tests indicated a statistically significant difference in the means of pre (M=68.81, SD=18.14) and post (M=61.76, SD=15.70) scores for overall CA; $t=4.06$, sig (2-tailed) $< .005$; and three of the four domains measured (group discussion, meetings, and public speaking). **Implications:** If CA is not adequately addressed, student pharmacists are at risk of maintaining and escalating this concern post graduation and into practice, affecting patient perception of pharmacist abilities, pharmacist self-efficacy, and interprofessional relationships. Results of this pilot study indicate that skills training in an active learning, didactic coursework setting can be effective in reducing CA and merits further study.

Association between Benzodiazepine Use and Trauma in Older Patients: Findings from the Medical Expenditure Panel Survey.

Brandon L Maticic, *University of Findlay*, Kiki Kapolis, *University of Findlay*, Gregory Reardon, *The University of Findlay*, M. Chandra Sekar, *University of Findlay*. **Objectives:** The 2015 Beers Criteria continues to warn of benzodiazepine usage among older adults, citing risk of falls, fractures and accidents. We evaluated the association between benzodiazepine use and serious traumatic events among older community-dwelling adults in the U.S. **Method:** Subjects in the nationally-representative, publically-available and de-identified Medical Expenditure Panel Survey (MEPS) database are enrolled annually and followed for two sequential years. Five MEPS panels were combined, including those whose members were 65+ years and whose first panel year started in either 2008-2012. We identified benzodiazepine users and non-users from first panel-year data. Using their second panel-year data, we identified those subjects who experienced any serious traumatic event (fracture, sprain, internal injury) that required an emergency room visit or hospitalization. **Results:** In all, 9,476 subjects were included, of whom 933 (9.85%) were benzodiazepine users. Among all subjects, 56% were 65-74, 32% were 75-84 and 12% were 85+ years. A total of 230 trauma events were identified. Logistic regression models, adjusted for gender, panel year and stratified by each age cohort, showed the following associations between benzodiazepine use and trauma: Odds ratio [OR]=2.31, $p=0.001$ for 65-74 years; OR=0.66, $p=0.335$ for 75-84 years; OR=1.18, $p=0.736$ for 85+ years. Female gender was strongly and independently associated with trauma in the 65-74 (OR=1.87, $p=.004$) and 75-84 (OR=2.48, $p=.001$) year cohorts. **Implications:** These data showed that benzodiazepine use appears to be strongly associated with serious trauma only within the “younger” 65-74 year-old community-dwelling cohort. Female gender strongly increases the risk of such trauma independent of age effects.

Associations among Student Conflict Management Style and Attitudes Towards Empathy.

Tessa J. Hastings, *Auburn University*, Jan Kavookjian, *Auburn University*, Gladys Ekong, *Auburn University, AL*. **Objectives:** The new education standards for pharmacy emphasize interprofessional education with a communication skills training component that specifically names conflict management and patient-centered communication as key content areas. This study aimed to explore the association between conflict management style and attitudes toward empathy (being patient-centered) in healthcare

encounters among first year pharmacy students (P1s). **Method:** An IRB-approved cross-sectional design was implemented among two cohorts of P1s (Fall 2014 and 2015) who consented to complete an online survey (Qualtrics) including the Thomas-Kilmann Conflict Mode Instrument professional version (TKCI-P) and the Kiersma-Chen Empathy Scale (KCES). The TKCI-P scores respondents across five conflict management modes varying in cooperativeness and assertiveness. The KCES measures attitudes towards empathy and its role in healthcare encounters (lower scores suggest more positive salience for empathy). Analyses included correlations and ANOVA. **Results:** Response rates were 86.6%(2014) and 90.5% (2015). Those scoring higher on the Competing mode reported significantly lower attitudes towards empathy ($p<0.05$). Those scoring higher on the Accommodating mode reported significantly higher attitudes towards empathy ($p<0.05$). Some student characteristics were significantly associated with KCES score and/or TKCI-P mode: African American students were significantly more likely to score higher for the Collaborating mode and females had significantly stronger attitudes towards empathy ($p<0.05$). **Implications:** Results suggest that curricular content should include a focus on awareness and training in empathy and conflict management for future pharmacists to be effective in their professional interactions. Pharmacy students using more constructive conflict management styles may be more successful in navigating patient and interprofessional interactions.

Attitudes Towards Interprofessional Education (IPE) Among Pharmacy and Osteopathic Medical Students.

Charnicia Huggins, *Touro College of Pharmacy-New York*, Evangelina Berrios-Colon, *Touro College of Pharmacy-New York*, Batoul Senhaji-Tomza, *Touro College of Pharmacy-New York*, Karen Clayton, *Touro College of Osteopathic Medicine*, Melvin E. Anthony, *Touro College of Osteopathic Medicine*. **Objectives:** Interprofessional education (IPE), as defined by the World Health Organization (WHO) is “students from two or more professions learning about, from, and with each other to enable effective collaboration and improve health outcomes.” Students who experience IPE may demonstrate improved interprofessional relationships as healthcare providers. However, the scope of published research evaluating students’ attitudes prior to taking IPE courses is limited. We therefore surveyed osteopathic medical (DO) students and pharmacy (PharmD) students enrolled in a cultural competency course to explore their knowledge of, attitudes towards, and readiness for IPE. **Method:** Students were administered a survey including three sections: demographics, general knowledge, and attitudes. Descriptive statistics were used. **Results:** 210 surveys were completed: 27 (12.86%) by PharmD students and 183 (87.14%) by DO students. Most students were female (54%), aged 25-29 (57%), and self-identified as White (46%). Many students (57%) were unfamiliar/vaguely familiar with IPE, but 52% (DO) and 92% (PharmD) strongly agreed/agreed that learning with the opposite discipline could enhance their education. Further, 61% (DO) and 96% (PharmD) strongly agreed/agreed that IPE would improve relationships after licensure. However, 29% (DO) and 7% (PharmD) strongly agreed/agreed that they did not currently have the time or interest to learn with other healthcare students/professionals. **Implications:** Although nearly 60% of students surveyed were previously unfamiliar with IPE, many were open to learning with other disciplines. Receptivity to IPE was greater among PharmD students than among their DO colleagues. Increased opportunities to interact and learn with other disciplines may raise awareness of the benefits of IPE.

Benefits and Challenges of Student Research as Perceived by Faculty Advisors. Marion K. Slack, *The University of Arizona*, Courtney Edel, *The University of Arizona*. **Objectives:** To identify the benefits and challenges of student research and the outcomes of student research as perceived by faculty advisors. **Method:** Interviews were conducted to identify the benefits and challenges of student research as perceived by faculty at a college where all professional students are required to complete a student research project. Faculty participation as an advisor is voluntary; all advisors for the past 5 years were eligible to participate. The interviews were conducted by a 4th year professional student. Questions were asked on the benefits and challenges of being an advisor, and outcomes of student research. Interviews were recorded and analyzed by categorizing the responses according to themes, summarizing the themes, and constructing tables. **Results:** Interviews were completed with 15 faculty advisors. The most important benefits identified for faculty were obtaining presentations and publications and interaction with students outside the classroom. Faculty thought the most important benefits for students were the development of research skills, project management skills, and critical thinking skills as well as an advantage in applying for residencies. The primary challenges were obtaining Institutional Review Board approval for projects involving human subjects in a timely manner, time management, and funding. The primary benefit to the college and university was perceived to be the resulting presentations and publications. **Implications:** Benefits to faculty of student research include conducting research that results in publications and presentations as well as providing an opportunity to mentor students. Students benefit through the development of project related skills and obtaining an advantage in applying for residencies.

Challenges and Opportunities for Pharmacists in Public Health. David A. Gettman, *D'Youville College*, Benjamin D. Aronson, *University of Minnesota*, Jean T. Carter, *University of Montana*, Negar Golchin, *University of Washington*, Yolanda M. Hardy, *Chicago State University*, Amany Hassan, *D'Youville College School of Pharmacy*, Karen A. Mlodozieniec, *D'Youville College*, Nina C. Morris, *Southwestern Oklahoma State University*, Dolores Nobles-Knight, *Chicago State University*, Sharon K. Park, *Notre Dame of Maryland University*, Elizabeth J. Unni, *Roseman University of Health Sciences*. **Objectives:** The primary objective of the study was to find evidence in the extant literature of how practicing pharmacists are making an impact on the leading indicators for Healthy People 2020. The secondary objective of the study was to develop an agenda for a pharmacy practice research network (PPRN) focusing on public health. **Method:** Using search tools such as Medline, PubMed, and International Pharmaceutical Abstracts, the investigators found relevant articles written in English that were in peer-reviewed journals using keywords such as: pharmacist, pharmacy, and a specific public health issue. Then, the same researchers extracted from a sample of these articles their findings and conclusions. **Results:** The investigators found at least four articles related to each of the following public health issues: 1.) Access to Health Services, 2.) Clinical Preventive Services, 3.) Environmental Quality, 4.) Injury and Violence, 5.) Maternal, Infant, and Child Care, 6.) Mental Health, 7.) Nutrition, Physical Activity, and Obesity, 8.) Oral Health, 9.) Reproductive and Sexual Health, 10.) Social Determinants, 11.) Substance Abuse, 12.) Tobacco, and 13.) Global Health. For each of these public health issues, pharmacists were found to be already offering services that have been successful in showing significant improvements in the associated outcomes. **Implications:** Pharmacists must be willing to improve their knowledge of public health issues through training programs. They must also understand the need to expand the scope of their prevention activities and collaborate with

other health care professionals through mechanisms such as medication-therapy management (MTM) to better address these and other challenging public health issues.

Comparing Perceived Stress and Stress Relief Practices of Students and Faculty in Healthcare Profession Programs. Scott A. Baggaly, *The University of Louisiana at Monroe*, Roxie L. Stewart, *The University of Louisiana at Monroe*, Adam Pate, *The University of Louisiana at Monroe*. **Objectives:** To assess perceived stress and stress relief practices among students and faculty in the College of Health and Pharmaceutical Sciences at the University of Louisiana at Monroe. **Method:** Students and faculty were emailed invitations to participate in surveys administered at the beginning (BL), midpoint (MP), and end (ES) of the fall 2014 semester. Surveys included the Perceived Stress Scale (PSS-14) and collected information about stress factors and stress relief practices. Participants were grouped by schools (pharmacy/nursing/other) and by classification (students/faculty). ANOVA models compared PSS-14 scores among schools, classifications, and the time of the semester. Stress factors and coping strategies were analyzed descriptively. **Results:** Respondents included 275 students/65 faculty (BL), 218 students/46 faculty (MP), and 172 students/48 faculty (ES). When comparing student vs. faculty PSS-14 scores, no significant differences were present at BL by either school or classification. At MP, students had higher scores than faculty (35.81 vs. 31.65; $p=0.0044$), but no differences existed by schools. At ES, findings were similar, with higher scores for students than faculty (35.77 vs. 31.67; $p=0.0032$), and no significant differences by school. Overall, the primary factor contributing to stress levels for students was academic responsibilities (49.2% of students), and for faculty was teaching responsibilities (36.7% of faculty). The primary stress relief technique for both students and faculty was talking with friends or family (72.6% of students; 78% of faculty). **Implications:** Awareness of perceived stress and stress relief practices could lead to collaborative efforts in reducing stress among students and faculty and improved learning experiences.

Competencies in Professional Program Accreditation Standards. Elizabeth A Davidson, *Midwestern University Chicago College of Pharmacy*, Spencer E. Harpe, *Midwestern University*. **Objectives:** To describe the inclusion of competencies in professional program accreditation standards. **Method:** Accreditation standards for allopathic and osteopathic medicine, dentistry, pharmacy, graduate-level nursing, physical therapy, occupational therapy, social work, public health, podiatry, optometry, chiropractic medicine, clinical psychology, and physician assistant studies were reviewed. The nature in which competencies and assessment of competencies were discussed was examined. **Results:** For the 14 professions, 20 accreditation standards were reviewed. All standards mentioned competencies or outcomes stated as desired practice behaviors. Competencies were directly specified in 5 accreditation standards (chiropractic medicine, social work, clinical psychology, master-level occupational therapy, and doctoral-level occupational therapy). In the remaining cases, programs were required to develop their own competencies or outcome statements consistent with existing external competencies or outcome statements (e.g., Center for the Advancement of Pharmacy Education Educational Outcomes). The exact wording of the competencies or outcome statements varied with some standards explicitly using the terms "competency" or "competence" and others using language that approximated competency (e.g., "students will be able to..." or "the program prepares students to..."). All accreditation standards included provisions requiring programs to use assessment methods to demonstrate student achievement of competencies or

educational outcomes. **Implications:** Consistent with the 2003 Institute of Medicine Report "Health Professions Education: A Bridge to Quality," all professional accreditation standards examined required competency- or outcome-based educational frameworks. Although current accreditation standards reflect a combination of profession-wide consensus statements and individual program-level definitions for competencies, there is a clear emphasis on the role of assessment in ensuring that program graduates achieve the desired competencies.

Consumers' Intended Information Seeking Behavior After Viewing Direct-to-Consumer Advertisement (DTCA). Monica Hwang, *St. John's University*. **Objectives:** Objective was to examine consumers' preferred sources for seeking additional information after viewing DTCA. **Method:** Participants viewed a print antidepressant advertisement in a magazine. Afterward, each participant was asked to complete a telephone survey that assessed participants' intended information seeking behavior. Items for the intended information seeking behavior measure were based upon pilot study participants' responses to the following question: "If you were interested in this advertised drug, where would you seek more information about it? Please list as many sources as you would like." Seven sources of information were cited across all pilot study participants: Internet, Brief Summary of Prescribing Information, 1-800 number, pharmacist, doctor, family, and friends. The measure instructed respondents to indicate a number that indicate their likelihood of performing the follow actions (e.g., I would search on the Internet). Items were measured using a scale ranging from 1 (not at all likely) to 7 (extremely likely). Descriptive statistics were conducted using SPSS® v22. **Results:** Total of 109 patients participated. Participants indicated the greatest likelihood of seeking information from the doctor (M=6.06; SD=1.52), Internet (M=4.64; SD=2.30) then pharmacist (M=4.55; SD=2.04). Followed by Brief Summary of Prescribing Information (M=4.47; SD=2.03), family (M=4.04; SD=2.22) then friends (M=2.90; SD=1.92). Calling the 1-800 number for information was ranked last (M=2.64; SD=1.96). **Implications:** In exploring from whom or where participants would seek for additional information about the drug, the top three information sources were the doctor, Internet, and pharmacists. Consumers' selection of doctors as their first source of information has been consistent throughout the years.

Consumers' Comprehension and Retention of Information Presented in a Modified Direct-to-Consumer Advertisement (DTCA). Monica Hwang, *St. John's University*, Henry N Young, *The University of Georgia*. **Objectives:** The objective was to examine consumers' comprehension and retention of information presented in a modified advertisement compared to the original advertisement. **Method:** This study used an experimental design. Participants (patients with kidney disease) were randomly assigned to view a modified print advertisement (experimental group) or the original print advertisement (control group) for an antidepressant. The advertisement was modified based upon health literacy principles (e.g., 8th grade reading level). Afterward, each participant was asked to complete 20 comprehension questions without having access to the advertisement. Within 48 hours of being exposed to the advertisement, each participant participated in a telephone survey. The survey assessed participants' retention of information provided in the advertisement. Mann-Whitney U tests were conducted to examine the between-group differences. **Results:** The experimental group had a statistically significant higher mean overall score for both comprehension and retention of information compared to the control group ($p < 0.01$). Regarding only the benefit information, no significant differences were observed between the

two groups on the comprehension and retention of information. However, when comparing only the risk information, the experimental group had significantly higher mean scores in both comprehension and retention of information compared to the control group ($p < 0.01$). **Implications:** The fair balance between benefit and risk information is a fundamental requirement of DTCA. However, risk information is often presented in an overwhelming manner for comprehension. Our study results detail successful techniques that can be used to enhance consumers' understanding and retention of information presented in DTCA.

Creation of a Co-curricular Leadership Development Program for Student Pharmacists of Professional Organizations. Dale E. English, *Northeast Ohio Medical University*, Jaclyn Boyle, *Northeast Ohio Medical University*. **Objectives:** Given ACPE Standards 2016 and personal experiences providing faculty advising to professional student pharmacists' organizations, five one-hour lunchtime programs were designed to discuss key leadership topics with student pharmacists. **Method:** Our college of pharmacy's leadership development program was established following discussions with student pharmacist leaders and fellow faculty advisors. Co-authors created a week-long program consisting of 5 one-hour lunchtime sessions, covering the topics of team dynamics/dysfunctions, conflict management/difficult conversations, membership engagement/recruitment, the science of leadership, and a pharmacy organization showcase. These sessions were facilitated by the co-authors as well as colleagues from other academic institutions. **Results:** Approximately 20 – 25 student pharmacists attended each of the lunchtime sessions. Attendees of the first four days of leadership programming provided both daily reflective thoughts of the programming and were invited to complete a program evaluation. Attendees' evaluations provided faculty with overwhelming positive feedback of this programming. On the final day each professional student pharmacists' organization provided a brief (2 – 3 minute) overview of their respective organization. All student pharmacists in attendance (75 – 85) were provided each organization's overview as well as actively participated in an open discussion, question and answer period during the last 15 – 20 minutes of this session. **Implications:** The tremendously positive feedback provided from student pharmacists attendees of this leadership development programming provides faculty with overwhelming evidence of both a need and desire for further development and administration of leadership development programming. Future leadership development programming is in the planning phase for Spring 2016. Sessions will invite all student pharmacists to attend.

Creative Partnership to Assess Health Beliefs, Health Literacy and Medication Adherence Among Ethnically Diverse Populations. Jeannie K. Lee, *The University of Arizona*, Susan J. Shaw, *The University of Arizona*, Cristina I. Huebner Torres, *Caring Health Center*, Josephine D. Korchmaros, *The University of Arizona*, Molly Totman, *Caring Health Center*. **Objectives:** Health beliefs and health literacy are believed to be important drivers of medication adherence. However, limited research has successfully integrated health literacy, culturally-variable health beliefs and social support into solving medication nonadherence among diverse populations. A unique partnership between pharmacy and anthropology investigators was formed to conduct a mixed-methods study to examine health beliefs, health literacy and barriers to medication adherence among urban, minority and medically underserved patients. **Method:** A sample of 400 patients (80 each from African-American, white, Hispanic, Vietnamese and Russian groups) are being recruited. The participants complete cross-sectional self-report surveys, delivered by culturally and

linguistically competent interviewers. The surveys assess health literacy, beliefs about medications, social support, and socioeconomic barriers to medication adherence. Pill counts complement self-reported adherence. **Results:** Currently, 338 participants (28% Hispanic, 28% Vietnamese, 19% African American, 15% Russian, and 10% White) are enrolled (mean age of 56 years, 61% female). Thirty-four percent of participants have inadequate health literacy with Vietnamese and Russian at higher risk compared to other groups ($p < .001$). Though 67% of participants self-reported adequate/high adherence, only 48% were adequately adherent to their medications according to pill counts. Self-reported adherence varied with the low health literacy groups (Vietnamese and Russian) reporting higher adherence. Adherence was negatively associated with concerns about medications, cost barrier, and social stressors. **Implications:** The initial findings suggest a vital need for culturally and individually tailored medication adherence support in this diverse, low-income population. The creative collaboration among pharmacy faculty, anthropologist and community health center has produced an effective research team.

Development and Validation of a Community Engagement Survey for Pharmacy and Other Healthcare Professions Students. Mark V. Siracuse, *Creighton University*, Lisa L Black, *Creighton University*, Theresa Cochran, *Think Whole Person Health*, Jennifer A Furze, *Creighton University*, Judith R Gale, *Creighton University*, Yongyue Qi. **Objectives:** The objective was to: 1) Develop a survey to assess student perceptions related to the value of and responsibility for community engagement and 2) Establish the validity and reliability of scales used to measure community engagement. **Method:** A 19-item survey was developed and administered to doctoral students in pharmacy, physical therapy, and occupational therapy. Scales were developed to measure the domains of community engagement, personal perspective and perceived obligation. Three items were also included as potential measurements of intended outcomes. Construct validity was determined using exploratory factor analysis with the Principle Components Extraction method and the Varimax with Kaiser Normalization rotation method. Reliability or internal consistency was analyzed using Cronbach's alpha. Survey items were administered electronically to students on twice, initially at the start of their first semester of classes and again at the end of the first semester, after participation in a community engagement activity. Only students who completed both survey administrations (pre and post) were included in the analysis. **Results:** Surveys were completed by 172 students. Three scales emerged from this analysis: a seven-item scale measuring community engagement (α [pre] = 0.82; α [post] = 0.89); a four-item scale measuring personal perspective (α [pre] = 0.78; α [post] = 0.84); and a six-item scale measuring obligation (α [pre] = 0.78; α [post] = 0.79). In addition, one item was identified as an outcome item. **Implications:** The survey will enable educators to assess the value of community-engaged learning and to facilitate students' ability to recognize the importance of their responsibility in promoting community health.

Development and Student Feedback of an Objective, Structured Management Exam (OSME). Jill M. Augustine, *The University of Arizona*, Marion K. Slack, *The University of Arizona*, Sandipan Bhattacharjee, *The University of Arizona*, Janet H. Cooley, *The University of Arizona*, Erin R. Holmes, *The University of Mississippi*, Terri L. Warholak, *The University of Arizona*. **Objectives:** To develop management skills through a role-playing Objective, Structured Management Exam (OSME). **Method:** Based on focus group interviews with pharmacy preceptors, five key management skills were selected

for inclusion in the OSME: 1) managerial communication; 2) decision-making; 3) conflict resolution; 4) professionalism; and 5) writing skills. OSME assessed students' understanding and application of these skills through a role-playing case with a trained volunteers (graded by a pharmacy manager/faculty member) and completion of a written document outlining the selected solution. Student performance was assessed using scoring rubrics with a rating scale of 'Does not meet expectations', 'Meets expectations', and 'Exceeds expectations'. The role-playing OSME was 15 minutes: 10 minutes for student/actor interaction and 5 minutes for feedback. Upon completion, student feedback was collected to improve the OSME for future classes. **Results:** Ninety-six students completed the OSME role-playing interaction case and 95 students completed the feedback questionnaire. Forty students (42%) received "meets expectations" or better on all key OSME skills. Fifty-six students (58%) received "does not meet expectations" on one or more key OSME skills. No student received all "does not meet expectations". Based on feedback, students appreciated the OSME, but wanted additional practice prior to the graded role-playing interaction. Many students thought the OSMEs helped them to build confidence and knowledge for communicating with colleagues and co-workers. **Implications:** The OSME provided students an opportunity to learn and apply management skills using real-world scenarios. The OSME will help to prepare students to handle future management situations, including conflict resolution and communication.

Educating Pharmacy Students on Medicare Part D Prescription Drug Plans through Community Outreach. Brittany L. Melton, *The University of Kansas*, Andrew Abe, *The University of Kansas*, Rafia S Rasu. **Objectives:** Medicare Part D is a major payer for medications, and pharmacists are well positioned to assist patients in choosing a prescription drug plan. This pilot study sought to assess student perceptions of a newly implemented Part D elective with mandatory community outreach and to document benefits and barriers to implementing the elective. **Method:** Three instructors and 13 students were involved in the one credit hour elective. The course required students to become certified Medicare Part D counselors. Students were invited to complete a survey after completing the course assessing how beneficial they perceived certain aspects of the course to be. **Results:** All 13 students became certified Medicare Part D counselors and completed 10 hours of direct patient contact assisted real patients to choose Medicare Part D plans during the open enrollment period in Kansas. Five students (38%) completed the pilot survey. Students reported that completing Medicare Part D counselor training was highly impactful for the course. Students also reported that participating in outreach events with the Medicare population were highly beneficial and estimated they saved patients between \$100-1200. Faculty reported significant time commitments in coordinating with the state health insurance assistance program to provide student training and sufficient outreach opportunities. **Implications:** Students found outreach a valuable learning experience and had a positive impact on patient expenditures for medications. Implementing an elective with community outreach is time intensive for students and faculty. Providing outreach opportunities can be limited by the resources of the state health insurance assistance program.

Evaluating Use of Comic Books in Student Learning of the Affordable Care Act (ACA). Jagannath M. Muzumdar, *St. John's University*, Somnath Pal, *St. John's University*. **Objectives:** To assess the pedagogical effectiveness of a comic book in student learning of the Affordable Care Act (ACA). **Method:** Comparative-group, pre-posttest survey design was used to measure pharmacy students'

comprehension of ACA. PharmD students (P-1year) from two sections of a Pharmacy and US Healthcare course participated in this study. Treatment group students received a comic book on ACA. The comparison group received the textual information, without pictures, from the book in a typed document. A posttest survey was administered later in the semester, before the instructor discussed ACA in class. Fifteen questions, developed from the information in the book and document, assessed pharmacy students' comprehension of ACA. Response options included a visual analogue scale. Independent sample t-test was used to assess the differences in the mean pre-posttest scores between the two groups. **Results:** A total of 103 (n=49 comparison vs. n=54 treatment group) students completed the survey. No statistically significant differences were found in the pre-test mean scores between the groups. Differences in the pre-post test mean scores of treatment group were significantly higher than the differences in the mean scores of the comparison group. Students agreed that the comic book format gave them a better understanding of ACA and increased their interest in learning more about the Act. **Implications:** Comic books were found to be effective in student learning of the ACA. The positive response from students highlight the point that pharmacy faculty could use comic books as supplemental reading in pharmacy courses.

Evaluation of a Week-long Professionalism Boot Camp for Incoming PharmD Students. Ashley N. Hannings, *The University of Georgia*, Lindsey H. Welch, *The University of Georgia*, Alan P. Wolfgang, *The University of Georgia*, Joan M. Watson, *University of Georgia College of Pharmacy*. **Objectives:** To evaluate the impact of a week-long professionalism boot camp (PBC) for incoming PharmD students. **Method:** Development of the PBC was based on recommendations from the College's Professionalism Task Force with the purpose of expanding traditional orientation to include activities that would establish expectations and contribute to a culture of professionalism. Programming was designed based on input from current students and faculty from all College of Pharmacy (COP) departments and divisions. The week-long PBC was delivered by COP faculty, students, and other University partners and culminated with the White Coat Ceremony. Students completed an evaluation at the conclusion of the PBC. **Results:** In August of 2015, 145 students attended the mandatory co-curricular PBC. Students rated the overall value of the PBC as 7.3 out of 10, assigning the greatest value to sessions that highlighted professional and academic expectations, extracurricular offerings, and College faculty and students. Using a 5-point Likert-type scale, students rated confidence in achieving PBC objectives. Scores were highest for the following: describing professionalism expectations (5/5), understanding applicable academic policies (4.8/5), and reflecting on the impact of personal values and attitudes (4.8/5). The most frequently suggested modification was to shorten the program. **Implications:** Based on positive evaluations from students and support from faculty and administration, the PBC will continue as an annual event. Next year's program will be condensed to three days based on feedback, with a continued focus on setting professionalism expectations and helping students make the transition from undergraduate to professional school.

Evolution and Outcomes of a Patient-counseling Training Module for First-year Student Pharmacists. Kimberly B. Garza, *Auburn University*, Erika L. Kleppinger, *Auburn University*, Natalie S. Hohmann, *Auburn University*, Jan Kavookjian, *Auburn University*. **Objectives:** To determine how well student self- and peer-evaluations of performance on new prescription counseling activities correlate with objective structured clinical examination (OSCE) scores.

Method: Counseling a patient on a new prescription is an essential component of the pharmacists' patient care process. To develop this skill, a new prescription counseling training module is delivered to first-year student pharmacists. The module consists of didactic lecture, observational learning, self- and peer-evaluation of performance in a recorded encounter, role play in skills lab, and OSCE simulations with formal assessment. Self, peer, and OSCE assessment data were collected from students completing the module in fall 2015 (n=134). Performance on each was measured in three domains (gathering information; management strategies; and monitoring/follow-up) and overall. Pearson's correlation coefficients were calculated between variables. **Results:** Mean overall scores for self-evaluation, peer-evaluation, and OSCE were $97 \pm 3\%$, $95 \pm 4\%$, and $92 \pm 6\%$, respectively. Overall peer scores were positively correlated with overall self scores ($r=0.279, p=0.001$) and overall OSCE scores ($r=0.171, p=0.048$), but there was no correlation between overall self scores and overall OSCE scores ($r=0.69, p=0.430$). Self and peer domain scores correlated well within each of the three domains ($p<0.001$). However, OSCE domain scores did not correlate with comparable domain scores for self or peer ($p>0.05$), except for "gathering information" ($r=0.247, p=0.003$). **Implications:** Student self-evaluations of performance in new prescription counseling may not be a good predictor of future OSCE performance. However, self-evaluations correlate well with peer-evaluations. Perhaps a ceiling effect exists, given the high mean score for self-evaluations. Further research is needed across multiple offerings of the course.

Exploring the Relationship between Sleep and Academic Performance Among Pharmacy Students in Team-based Learning. Melanie Sherlock, *None*, Rojelio Yopez, Michael Nguyen, *Regis University School of Pharmacy*, Robert Haight, *Regis University*. **Objectives:** To examine the relationship between sleep quality and academic performance among pharmacy students in a Team-Based Learning (TBL) setting. **Method:** Pharmacy students in their P2 or P3 year of 2015-2016 voluntarily participated in an anonymous survey. The study variables consisted of student demographic information including sleep duration, habits, and tendencies towards activities. The study outcomes consisted of students' average GPA in various courses during the spring semester of 2015. Regression analyses were performed on different combinations of multiple independent variables for the study outcome. **Results:** A total of 121 students participated in the anonymous survey and 117 students (P2, n=64; P3, n=53) were included in the analysis. The first analysis assessing the combined effects of all independent variables on cumulative GPA revealed no significant results. Subsequent analyses found a statistically significant relationship between duration of sleep 0.06 ($p=0.017$) and ability to concentrate during class 0.11 ($p=0.035$) on academic performance. **Implications:** Increased duration of sleep in pharmacy students resulted in statistically significantly higher GPAs in the Integrated Pharmacotherapy courses. The GPAs encompassing all other classes were not significant when comparing the classes of 2017 and 2018. Additional research is needed to strengthen and further elucidate the relationship between sleep and academic performance in a Team-Based Learning setting.

Extended Technology Acceptance Model for Predicting Individuals' Intention to Use Smartphone Fitness Applications. Sanika A. Rege, *University of Houston*, Sujit Sangsiry, *University of Houston*. **Objectives:** To predict the individuals' intention to use smartphone fitness applications, by using Extended Technology Acceptance Model (ETAM) and to determine if there is a significant difference in Body Mass Index (BMI) among users and non-users of smartphone

fitness applications. **Method:** Design: Prospective cross-sectional study. Setting: Various locations in Houston, TX in 2015. Participants: Convenience sampling of 104 adults in Houston area. Intervention: A pre-validated survey containing 31 items, evaluated on a 5-point Likert scale (1-Strongly Disagree to 5-Strongly Agree), which measured the ETAM variables. Main Outcome Measures: Predictors of intention to use smartphone fitness applications for individuals owning smartphones. **Results:** Overall, the ETAM constructs showed fairly good reliability. Stepwise regression analysis showed that ETAM explained 58% of the variance in individuals' intention to use smartphone fitness applications for individuals owning smartphones. Attitude towards use ($\beta=0.536$, $p<0.0001$), perceived ease of use ($\beta=0.287$, $p<0.0001$) and image ($\beta=0.141$, $p<0.05$) were significant predictors of individuals' intention to use smartphone fitness applications. There was no significant difference observed in Body Mass Index (BMI) among users and non-users of smartphone fitness applications. **Implications:** ETAM served as a good model in predicting individuals' intention to use smartphone fitness applications. **Keywords:** Smartphone fitness applications, Intention to use, cross-sectional study.

Health Information Technology Competencies: Results of a Focus Group. Linda G. Martin, *University of Wyoming*, Terri L. Warholak, *The University of Arizona*, Ana Hincapie, *University of Cincinnati*, Andrea L. Kjos, *Drake University*, Tyler Gallo. **Objectives:** The first goal was to develop a list of health information technology competencies that should be taught in doctor of pharmacy curricula. Secondly, focus groups were held to gather feedback on the competencies, which were then revised. **Method:** The American Association of Colleges of Pharmacy (AACCP) pharmacy informatics task force used 11 sources to create a list of pharmacy informatics competencies. Members of the committee met on 6 occasions to revise and update the list. Subsequently, faculty feedback about the competency list was obtained via two synchronous online focus groups in August 2015. **Results:** A total of 8 people (1 department chair, 6 faculty and a graduate student) participated in the focus groups (6 from private and 2 from public institutions). Focus group participants felt the list included too many competencies to be covered in a timely manner. Some participants indicated that basic computer and internet competencies should be considered pre-requisites. Participants also recommended that competencies be split by proposed curricular placement (e.g., prerequisite, required, elective, didactic, experiential) for each objective. Focus group participants agreed the proposed curriculum was aligned with the new ACPE standards. Other feedback suggested that certain domains, such as emerging technologies, needed bolstering. The competency list was revised in response to this feedback. **Implications:** New ACPE standards require that professional pharmacy curricula cover multiple aspects of health information technology. The proposed competency list can serve as a reference to assist in the development of the curriculum and ensure compliance with the new standards.

Health Literacy Awareness in Student Pharmacists: Associations with Cultural Sensitivity. Gladys Ekong, *Auburn University, AL*, Jan Kavookjian, *Auburn University*. **Objectives:** Objectives: Cultural differences and health literacy limitations have been shown to influence patient preferences and outcomes; sensitivity to cultural differences and health literacy characteristics are important in patient-centered communication, which is one of five areas of primary focus in the new CAPE standards. This study examined student cultural and health literacy sensitivity to inform communication skills training and development. **Method:** Method: The IRB approved cross-sectional study was conducted among consenting first year pharmacy students (N=134). Cultural sensitivity and health literacy content as separate

modules in a communication skills course were delivered via lecture, Motivational Interviewing (MI)-based cases, and class discussions/activities. Cultural sensitivity was measured using the Intercultural Sensitivity Scale (ISS); health literacy perceptions were addressed via a brief writing assignment that included revisions to reach a 4th or 5th grade Flesch-Kincaid readability level. Students completed an online survey reporting awareness-raising and health literacy intentions regarding future patient communication. **Results:** Results: Logistic regression was conducted to examine students' likelihood of using health literacy strategies for patient education. Age, race, gender, ISS score, empathy (KCES), and MI OSCE grade were entered for analysis. The overall model significantly predicts intention to use health literacy strategies ($X^2(df=1)=7.161$, $p=.007$), with model fit ($-2 \log \text{likelihood}=60.790$, Hosmer & Lemeshow, $X^2(df=7)=4.48$, $p=.723$). Cultural sensitivity (ISS) was a major significant predictor (Wald ($df=1$)=6.22, $p<0.05$). **Implications:** Implications: Training in cultural sensitivity and health literacy awareness-raising could be important for student intentions to develop patient-centered communication skills for use in diverse patient encounters.

Initial Career Interests and Values of Student Pharmacists. Justin Gatwood, *The University of Tennessee*, Lance Lineberger, *University of Tennessee College of Pharmacy*, Joseph Swanson, *University of Tennessee College of Pharmacy*. **Objectives:** While the majority of pharmacy school graduates continue to enter community or institutional practice, a variety of pharmacy-related opportunities exist beyond the traditional options. The purpose of this research was to examine the qualities that student's seek in future employment as well as their current career plans early in the educational sequence. **Method:** All first- and second-year student pharmacists of the University of Tennessee College of Pharmacy were asked to complete a paper-based survey during a regularly-scheduled lecture. The instrument included 40 items and had both validated and study-derived questions. In addition to demographic information, student data on career interest and knowledge, preferred characteristics of an ideal position, and anticipated Advance Pharmacy Practice Experience rankings (P2 only) were collected. **Results:** A total of 331 students completed the survey (100% of P2 and 82% of P1 students). Over 70% of all students plan to pursue a career in either a hospital or community setting; however, 15% of students intend to secure a non-traditional position and interests were more diverse among second-year students. Among non-traditional options, interest was highest for a position in the pharmaceutical industry (6%). Students overwhelmingly listed work/life balance as the most important aspect of a future position (35.5%), followed by job stability (19.5%) and financial reward (11.1%), and these rankings were consistent across career path, gender, and relationship status. **Implications:** Schools of pharmacy need to be actively aware of the diverse career interests of their students and create opportunities for exploring all pathways to employment with specific sensitivity to non-traditional roles.

Measuring Cultural Competency in Pharmacy Education. Margarita Echeverri, *Xavier University of Louisiana*, Elizabeth J. Unni, *Roseman University of Health Sciences*, Fadi M. Alkhateeb, *Texas A&M Health Science Center*, Rajan Radhakrishnan, *University of Charleston*, Krystal L. Moorman, *The University of Utah*, Spencer E. Harpe, *Midwestern University*, Anandi V. Law, *Western University of Health Sciences*. **Objectives:** With increased diversity in patient population, it is essential that pharmacists are culturally competent. The pharmacy literature does not have a scale that measures the cultural competence specifically of pharmacists or pharmacy students. The objective of this study was to examine the psychometric properties

of the Self-Assessment of Perceived Level of Cultural Competence (SAPLCC) to guide curriculum development within different pharmacy programs. **Method:** The SAPLCC was administered to pharmacy students in seven different pharmacy programs during fall 2015. Exploratory Factor Analysis (EFA) with principal components and varimax rotation was conducted to examine the more relevant factors to assess students' self-assessment of cultural competence. **Results:** A total of 797 pharmacy students completed the SAPLCC: 30.8% P1s, 25.1% P2s, 22.7% P3s, and 20.8% P4s. EFA resulted on the extraction of fourteen factors as the best fit model to measure student perceived level of cultural competence. The 14 factors include 79 items and explain 73.3% of the total variance. The items were measured on a 4-point Likert scale and lower numbers indicate lack of cultural competency. Grand mean scale was 2.71 with Cronbach's alpha 0.969 for the total sum scale. The mean scales for the 14 factors ranged from 2.03 to 3.50 and the Cronbach's alpha ranged from 0.702 to 0.965. **Implications:** The SAPLCC was found to be a reliable self-assessment instrument to measure the perceived level of pharmacy students' knowledge, skills, attitudes, and encounters in cross-cultural environments and identify students' needs for training in cultural competence.

Medical Marijuana Dispensing Under Prescription Drug Monitoring Programs. David M. Baker, *Western New England University*, Anh Nguyen, *Western New England University College of Pharmacy*, Percy Obike, *Western New England University College of Pharmacy*. **Objectives:** Study objectives were to determine, in the 23 states and D. C. allowing medical marijuana dispensing, how each jurisdiction handles such dispensing according to controlled substance law, and whether such dispensing must be reported to the prescription drug monitoring program ("PDMP"). **Method:** A nine-question online survey was prepared and emailed to the PDMP controlling agency within each jurisdiction having medical marijuana. Follow-ups were sent in two-week intervals after nonresponse. If non-responsive after three requests, the researchers independently obtained the answers via available public law resources. **Results:** 22 (91.7%) of the 24 jurisdictions still consider medical marijuana to be a controlled substance, 18 as schedule I. In 83.3% of the jurisdictions, medical marijuana dispensaries do not enroll in the PDMP, and in 87.5%, the dispensaries are not required to report marijuana dispensing to the PDMP. In fact, in 67.9% of the jurisdictions, the dispensaries are exempt from reporting by law. In 23 of the jurisdictions the dispensaries, and in 21 of the jurisdictions the medical certifiers, do not have to check and/or consult the PDMP prior to dispensing medical marijuana or certifying a patient. **Implications:** PDMPs are a tool used by states to address prescription drug abuse, addiction and diversion. 22 of 24 jurisdictions, allowing medical marijuana dispensing, still hold that medical marijuana is a controlled substance, classified as either schedule I or II. Yet, 21 of these jurisdictions do not require the dispensing be reported to the PDMP nor that the PDMP be consulted, defeating the intent behind the establishment of the PDMP.

Motivating Factors for Underrepresented Ethnic Minority Student Selection of a Pharmacy Program: A Qualitative Study. Robert Lamontagne, *The University of Texas at Austin College of Pharmacy*, Diane B. Ginsburg, *The University of Texas at Austin College of Pharmacy*. **Objectives:** The purpose of this research is to identify how underrepresented minority students choose a pharmacy program to attend, as well as what factors motivate these students to select their respective program. **Method:** A qualitative research study design was utilized in this study to gain a deeper understanding of ethnic minority experiences in choosing a pharmacy program. Ten pharmacy students from The University of Texas at Austin College of Pharmacy that

self-identified as African American, African, or Hispanic/Latino were included in this study. In addition to a pre-interview questionnaire, in-person, semi-structured interviews were conducted to gather information on the decision-making process for these students in selecting a pharmacy program. **Results:** Four composite themes emerged from the data: influence, institutional characteristics, financial variables, and admission process. These themes consist of a compilation of data codes and factors associated with program choice. Factors such as family influence and program reputation/ranking played major roles in shaping these composite themes. Furthermore, these themes help to answer the original research questions: 1) How do minority students select a pharmacy school to attend? 2) What factors influence these students' choice of a pharmacy program to attend? **Implications:** Identifying motivating factors for underrepresented ethnic minority students has future implications for recruitment of minority students by colleges and schools of pharmacy across the country. By tailoring recruitment efforts, pharmacy programs can ensure a more diverse student body, and ultimately, a more diverse pharmacist workforce.

Motivational Interviewing Interventions and Outcomes in Randomized Controlled Trials with T2D Adults. Gladys Ekong, *Auburn University, AL*, Jan Kavookjian, *Auburn University*. **Objectives:** Motivational Interviewing (MI) is a patient-centered communication skills set with a growing evidence base across health professions. The new CAPE standards implementation guide specifically identifies MI as a patient-centered communication skills set example for student training. Type 2 diabetes (T2D) is a prevalent chronic disease that pharmacists often encounter for treatment and monitoring. It is relevant to examine evidence and gaps in the literature for MI intervention strategies in a chronic disease like T2D to inform curricular training in MI-based intervention. **Method:** Relevant databases were searched, including MEDLINE, CINAHL, PsycINFO, and PsycARTICLES. Randomized controlled trials (RCTs) published from January 1990 to October 2014 investigating the effects of MI-based intervention on outcomes of T2D were retrieved and systematically reviewed by two researchers. Inclusion criteria: RCTs of MI-based T2D interventions on any behavioral or clinical outcomes. **Results:** 159 initial studies; 14 retained. MI groups had significantly better healthy eating results than control in five of ten studies. Non-significant differences were reported for being active (n=10), smoking cessation (n=4) and alcohol reduction (n=2); no retained RCTs addressed medication nonadherence. Five of 14 studies for A1C, and one of eight studies targeting BMI showed significant reduction for the MI group compared to control. Five studies examining blood pressure and cholesterol reported non-significant results. **Implications:** Frequent MI-based interactions were associated with better outcomes, suggesting that the repetitive nature of pharmacy refill encounters could serve as an effective framework for having MI-based conversations about health behavior changes. RCTs of MI and medication adherence are lacking.

Patient Satisfaction with Student Pharmacist Encounters in an Ongoing Faculty-supervised IPPE Course. Jan Kavookjian, *Auburn University*, Paul Paratore, *Auburn University Harrison School of Pharmacy*, Margaret A. Williamson, *Auburn University*, Lori Hornsby, *Auburn University*, Aubrey P. Fields, *Auburn University Harrison School of Pharmacy*, Gladys Ekong, *Auburn University, AL*. **Objectives:** Patient encounters are an important part of the learning context for student pharmacists in introductory pharmacy practice experiences (IPPEs). Assessing the patient's perspective for these encounters could inform planning for patient-centered content and structure for these encounters. The objective of this study was to assess enrolled patients' satisfaction with student pharmacist

encounters in an ongoing IPPE program and course. **Method:** An IRB-approved cross-sectional, anonymous survey design was implemented among all 343 patients visited regularly by students within the School's ongoing IPPE course/patient care program. A satisfaction measure was developed by adapting the validated PSQ18 domains/items from medical care encounters to student IPPE encounters (1-5 Likert response format, 1=completely disagree). A global satisfaction rating item (0-100) was added. In March 2015, a one-shot mailout was implemented with a cover letter from the Dean. Descriptive statistics were generated. **Results:** The response rate was 53.4% (n=174 of 326 usable). Respondent characteristics were representative of the program population. Highest satisfaction was reported for student friendliness and courteous manner (4.71), having medication information fully explained by students (4.40), and getting questions/concerns answered/resolved (4.31). The items of lowest rating involved student visits happening too often/ not enough (3.34), feeling students sometimes ignore what patient says (4.26, negatively worded), and students sometimes hurrying during visits (4.13). Mean global satisfaction rating was 96.73. **Implications:** Respondents reported high overall satisfaction; implications for improvement included student training for the 'hurrying' and inactive listening perceptions, and regular assessment of patient visit preferences. Further research is needed for psychometric analysis of the instrument.

Perceived Adequacy of Content and Experiences Regarding Vaccination Clinic Business Operations Among Pharmacy Students. David L. George, *The University of Oklahoma*, Eric J. Johnson, *The University of Oklahoma*, Michael J. Smith, *The University of Oklahoma*, Katherine O'Neal, *The University of Oklahoma*. **Objectives:** Students in Fall 2012 and 2013 expressed the need for content and experiences regarding vaccine clinic business operations. Therefore, in 2014, a Pharmacy Business and Entrepreneurship (PBE) course was modified to include a semester-long case study and didactic lectures highlighting business operations. This project's objective is to compare perceptions of PBE students versus non-PBE students considering the adequacy of content and experiences regarding business operations in Fall 2014 and 2015. **Method:** This project was a cross-sectional, electronic survey design. All research was approved by the Institutional Review Board. Survey items were based on PBE course modifications. The survey was comprised of: demographics, perceptions of adequacy of content and experiences, and confidence in performing business operations. The survey was administered online using Qualtrics software and available for two weeks to 108 students that participated in the influenza clinics during Fall 2014 and 2015. **Results:** Seventy-four students (68.5%) responded to complete the survey, 29 were PBE students. Most respondents were: third-year students (88.1%), under 25 years old (43.4%), and in jobs offering vaccinations (68.3%). A higher proportion of PBE students compared to non-PBE students agreed content was adequate for all operations except collection of billing information. Also, a higher proportion of PBE students compared to non-PBE students agreed experiences were adequate for all operations except for consent form review. **Implications:** Following course modifications, a higher proportion of PBE students compared to non-PBE students exhibited higher perceived adequacy of content and experiences for most vaccination clinic business operations.

Personal Finance Beliefs and Behaviors: A Longitudinal Analysis of Pharmacy Graduates. Nasar Ansari, *East Tennessee State University Gatton College of Pharmacy*, Tandy Branham, *East Tennessee State University Gatton College of Pharmacy*, Nicholas E. Hagemeyer, *East Tennessee State University*. **Objectives:** 1) Describe personal finance (PF) perceptions of the East Tennessee State University (ETSU) Gatton College of Pharmacy Class of 2014 upon and 1-year post-graduation; 2)

Examine the association between PF elective course completion during pharmacy school and post-graduation PF behaviors. **Method:** Students enrolled in the ETSU Class of 2014 completed a self-administered questionnaire that assessed student characteristics (e.g., participation in a PF elective during school), PF characteristics (e.g., student loan indebtedness), perceptions (e.g., confidence in ability to manage PF), and behaviors (e.g., monthly budgeting) one week prior to graduation and 18 months post-graduation. Paired and independent samples statistical analyses were conducted to examine changes in responses over time and PF course participation. **Results:** Sixty percent of the cohort completed both questionnaires. Students reported an average student loan debt balance of \$155,571 (\pm \$83,853) 18 months post-graduation and average loan term length of 17.3 (\pm 8) years. Students' concerns about their student loan debt were significantly higher prior to graduation as compared to 18 months post ($p=0.01$). No significant differences were noted for student loan debt amount or student loan term length across PF elective participation. Students who took the personal finance elective were significantly more likely to develop monthly budgets ($p=0.01$) and report positive career satisfaction as compared to students who did not ($p=0.04$) 18 months post-graduation. **Implications:** To our knowledge, this is the first study to track PF perceptions and behaviors of pharmacy graduates longitudinally. Continued tracking and analysis will inform PF curricular integration and alumni personal and professional development.

Pharmacy Law and Public Policy Mock Board Hearing: Assessing Perceptions, Effectiveness, and Application. Liza K Vo, *Midwestern University College of Pharmacy - Glendale*, Lena K Hui, *Midwestern University College of Pharmacy - Glendale*, Mary K. Gurney, *Midwestern University*. **Objectives:** Evaluation of a mock pharmacy board hearing (mock hearing) on students' (1) perceptions and (2) application of course material. **Method:** First-year pharmacy students participated in a mock hearing held in PPRA 1524 Pharmacy Law and Public Policy during spring 2015 at Midwestern University College of Pharmacy-Glendale. A 29-item paper survey was administered after completion of introductory pharmacy practice experiences in fall 2015. The survey included: perceptions, workshop and course feedback, application of concepts from workshop, and demographics. Data was entered into Qualtrics® and descriptive and nonparametric statistics calculated using SPSS v 22.0. **Results:** Thirty-six of 150 students (24% response rate) completed the post-IPPE survey. Respondent demographics include: 19 females (53%); 25 (64%) students were 29 years old or younger, 27 (75%) had a BS/BA before entering pharmacy school, and 25 (69%) had worked as a technician and/or intern. Respondents were positive in their assessment of the mock hearing on the following: (1) facilitated understanding of pharmacy laws and regulations ($> 92\%$ agreement), (2) effectiveness ($> 90\%$), and (3) application ($>75\%$). On the five counts, a majority of student guilty verdicts were in agreement with the board decision. All nonparametric, two-tailed tests (Pearson chi-square and Kendall's tau) comparing respondents with and without pharmacy experience were non-significant for these three areas. **Implications:** Pharmacy interns and pharmacists are expected to abide by all of the rules and regulations that govern pharmacy practice. Incorporation of interactive lessons such as mock board hearings can improve understanding and retention of concepts after completion of pharmacy law course.

Pharmacy Practice in the South Dakota Correctional System: Discovery of an Unconventional Experiential Practice Site Chamika Hawkins-Taylor, *South Dakota State University*, Brittany Bailey, *South Dakota State University College of Pharmacy*, Austin Block, *South Dakota State University College of Pharmacy*. **Objectives:** The study aimed to compare pharmaceutical practices within

the South Dakota Correctional System to those characterized by AACP as optimal for student training. **Method:** The AACP criteria was used as a conceptual framework. Three South Dakota Adult prison facilities were included in an exploratory study. Mixed methods were used to obtain perspectives from prison-health employees. Interviews were conducted with three purposively sampled individuals responsible for pharmaceutical policymaking, practice, and evaluation. Interview recordings were transcribed verbatim by each researcher and compared for accuracy. A web-survey, which allowed for open-ended comments was administered through Question Pro® to a sample of prison medical staff. The Framework, content analysis method was used for transcript analysis and interpretation. Data was coded and indexed based on the thematic framework created. Thirty-six pages of transcripts and twenty additional pages of survey comments were included in the analysis. **Results:** Words related to AACP's Optimal Practice Framework themes appeared frequently. Words associated with Medication Therapy Management occurred >100 times. Words related to patient-centered care, informatics, systems management and evidenced-based practice occurred >50 times. The latter four themes were organized under Medication Therapy Management, an optimal, experiential practice site theme. **Implications:** Pharmacist training in medication therapy management is particularly important when considering the care obstacles for this culturally diverse, prison population. Challenges include gaining access to needed medications, cultural language barriers, poor health literacy and communication dissonance among providers and their patients. Experiential practice models centered on MTM are likely to improve student pharmacy education and overall patient care among inmates.

Pharmacy Student Awareness, Aspiration, and Preparation for pursuing Research Fellowships. Jett Paroan, *Shenandoah University*, Isha Patel, *Shenandoah University*, Yun Han, *University of Michigan*, Wallace Marsh, *University of New England*, Mark S. Johnson, *Shenandoah University*. **Objectives:** To evaluate pharmacy student understanding and aspiration of pursuing post graduate education with a focus on research fellowships. **Method:** This was a cross sectional survey study. A questionnaire was distributed among the first to third year pharmacy students in a US based private teaching university from August, 2015 to December, 2015. Survey questions comprised of demographic information, interest in pursuing research fellowships, types of research fellowship programs, and factors that deter students from pursuing research fellowships. Chi square analysis was used to study the association between the demographic variables and student aspiration of pursuing research fellowships using SPSS version 21. P values of less than 0.05 were considered statistically significant. **Results:** A total of 277 respondents completed the survey. Overall, 28.8% of students expressed interest in applying to a fellowship upon graduation. There was a significantly higher percentage of students expressing interest at the satellite campus compared to the main campus (43.1% vs 19.1%; $p < 0.01$). The third year students expressed less interest than the first and second year students (20.3% vs 34.3% and 36.0% respectively; $p = 0.26$). There was no significant difference in interest in pursuing a fellowship by gender ($p = 0.923$). The most frequent reason for not wanting to pursue a fellowship was 'financial obligations'. **Implications:** With a focus on pharmacy residencies, limited literature exists on pharmacy fellowships. The results of this study will improve awareness about research fellowships among pharmacy students. Future studies should focus on targeting the barriers that teaching based academic institutions face in enhancing their research fellowship programs.

Preceptor-assessed Progression of Student Self-care Counseling Skills after Integrated Learning of Content. Aleda M. Chen, *Cedarville University*, Phillip Thornton, *Cedarville University*, Stephanie Cailor, Thad Franz, *Cedarville University*, Jeb Ballentine, *Cedarville University*. **Objectives:** To assess the progression of student self-care counseling skills during a semester-long community pharmacy introductory pharmacy practice experience (IPPE). **Method:** During their P1 year, self-care counseling is integrated, as students learn a self-care topic, practice counseling in pharmacy practice lab with formative feedback, and then practice again in their weekly IPPE. A rubric was created for quick assessment of student patient interaction and self-care counseling skills (10 items, 4-point Likert type, 1=Unsatisfactory, 4=Commendable, Cronbach's alpha=0.853). After IRB approval, preceptors evaluated 3 self-care topics (cough/cold, heartburn, wound care) at the beginning, middle, and end of the IPPE. Data were analyzed for changes using a Wilcoxon signed-rank test in SPSS v.23. **Results:** Student mean scores were high (35.88 ± 3.89 , maximum possible score=40) in the first encounter and remained similarly high. Individual items received an average of a "satisfactory" score or higher on all assessments, with no significant changes in any of the items except for a significant improvement in the word use (Week 1 vs. 2, $p = 0.029$) and use of the teach-back method (Week 1 vs. 3, $p = 0.001$). **Implications:** Integrating content and allowing multiple opportunities for practice resulted in satisfactory skills during self-care counseling encounters. While preceptors did receive directions on how to complete the assessments, further training may be needed to ensure accurate assessment of student skills.

Preparing Student Pharmacists for Patient-focused Counseling in Asthma: Addressing Patient Barriers to Medication Adherence. Tatiana Makhinova, *The University of Texas at Austin*, Jamie C. Barner, *The University of Texas at Austin*, Sharon Rush, *The University of Texas at Austin*, Nicole K Wilson, *The University of Texas at Austin*. **Objectives:** When providing Medication Therapy Management (MTM) services, pharmacists need to know patient-specific barriers to adherence. The objective was to assess asthma adherence and identify common barriers to adherence, using a specialized instrument. **Method:** Third-year pharmacy students (N=63) enrolled in a required experiential community pharmacy MTM course used the specialized instrument to counsel adult patients with persistent asthma. The instrument, which was completed by patients, included the Morisky 4-item adherence scale and the ASK-12 adherence tool modified for asthma. ASK-12 is a reliable and valid instrument designed to identify adherence barriers using following subscales: inconvenience/forgetfulness, treatment beliefs and behavior. Descriptive statistics were used to address the study objective. **Results:** Data from 49 patients demonstrated that patients primarily had low (46.9%) and medium (36.7%) adherence. Among those with low adherence, the following barriers were prevalent: forgetfulness (73.9%), inconvenience (60.9%), symptom-based use of controller inhaler (69.6%). The majority of patients with low adherence did not have an Asthma Action Plan (73.9%), whereas 75.0% of patients with high and 44.4% with medium adherence had one. Only 26.5% of all patients owned a peak flow meter. **Implications:** The proposed instrument was helpful in acquiring information regarding the reasons for nonadherence. Once an MTM provider is aware of poor adherence (self-reported or through claims data), a brief questionnaire can be used to identify barriers and provide targeted counseling. The next step is to incorporate materials for pharmacists and patients addressing resolution of specific barriers and further investigate effectiveness of such approach.

Research and Evaluation Topics in Health Professional Program Accreditation Standards. Spencer E. Harpe, *Midwestern University*, Nathan H Perkins, *Loyola University Chicago School of Social Work*. **Objectives:** To examine how student learning of research and evaluation topics is addressed in professional program accreditation standards. **Method:** Accreditation standards for allopathic and osteopathic medicine, dentistry, pharmacy, graduate-level nursing, physical therapy, occupational therapy, social work, public health, podiatry, optometry, chiropractic medicine, clinical psychology, and physician assistant studies were reviewed. Content analysis of text associated with research/evaluation topics was conducted to identify trends/themes. **Results:** Overall, 20 accreditation standards were reviewed. With one exception, all guidelines explicitly mentioned research/evaluation topics; 9 standards identified these topics as required content. Wording related to research/evaluation topics reflected two approaches – understanding vs. engaging. All guidelines addressed research/evaluation topics in the context of understanding or application (e.g., evidence-based practice [EBP]). Often framed in the context of quality improvement (QI) or practice evaluation, student engagement in research/evaluation was noted in 8 standards (physical therapy, social work, occupational therapy, graduate nursing, public health, and clinical psychology). Engagement was “encouraged” in 3 standards (dentistry, pharmacy, and allopathic medicine). Only 3 standards required final projects (doctoral occupational therapy, clinical psychology, and doctoral nursing) with one standard (public health) requiring culminating experiences. **Implications:** EBP and QI have been identified as core competencies for health professionals. Knowledge of research/evaluation methods is important for EBP. While consistently addressing EBP, accreditation standards are varied in their approach to research/evaluation topics for QI and practice evaluation. If students are expected to engage in QI and practice evaluation upon program completion, research/evaluation topics may need to be approached differently (e.g., understanding vs. doing), perhaps requiring updates to accreditation language.

Student and Faculty Perceptions About Mandatory Influenza Vaccinations on a Health Sciences Campus. Philip E Looper, *University of Oklahoma*, David L. George, *The University of Oklahoma*, Susan E. Conway, *The University of Oklahoma*, Eric J. Johnson, *The University of Oklahoma*. **Objectives:** To collect and determine differences between student and faculty perceptions about mandatory influenza vaccinations. **Method:** Data from a cross-sectional survey via Qualtrics® was used to gather information from students, faculty, and staff at the University of Oklahoma Health Sciences Center in Oklahoma City, Oklahoma during the 2015 fall flu season. Participants were invited in-person during flu clinics and via email afterward to answer questions related to mandatory influenza vaccination for healthcare workers. Participants were given reminder emails on days 17 and 30 following the flu clinics. Candy incentives were offered to participants during flu clinics. Participants who provided their contact information in the online survey were entered into drawings for one of five fitness trackers. A subset of faculty and student responses was compared for analysis. **Results:** A total of 296 faculty and 244 student surveys were analyzed. Compared to faculty (68.14%), more students (77.37%) had direct patient interaction. More students (74.49% vs. 67.69%) knew whether they had a mandatory flu vaccine requirement. However, fewer students believed they would get a flu vaccine if it was not mandatory (79.67% vs. 92.88%) ($p < 0.05$). High proportions of both students and faculty agreed that mandatory flu vaccinations were appropriate for the healthcare environment (95.02%, 92.88%), and healthcare workers obtaining the flu vaccine positively impacts patients’ health (95.02%, 92.88%). **Implications:**

Understanding how students and faculty view flu vaccinations will spur discussion on the benefits of the flu vaccine and the potential impact of mandatory vaccination requirements on future healthcare professionals and their patients.

Student Peer Assessments of Counseling when Given Information about Expected Performance Level. Jean T. Carter, *University of Montana*, Lisa Venuti, *University of Montana*, Heather Daniels, *University of Montana*. **Objectives:** The purpose of this evaluation was to determine whether setting basic expectations for performance prior to a counseling activity to be peer reviewed would help students be more realistic in their assessments. **Method:** Second-year (P2) pharmacy students were assigned a counseling task that included peer assessment. The rubric had three levels (exceptional, acceptable, needs work) and addressed 13 elements of counseling. Students in the first section (i.e., control group) were given the rubric checklist with no additional instruction; students in three subsequent sections were told faculty expectation for counseling at this time was “acceptable” and were encouraged to use “exceptional” or “needs work” categories when appropriate. Students worked in groups of 4-5 and took turns being the pharmacist, patient, or judge. There were 2-3 judges per counseling performance. The judges conferred and completed one rubric for the student doing the counseling. **Results:** Students without upfront instruction consistently rated their peers as “exceptional” across all categories whereas students receiving instructions prior to the activity used “acceptable” ratings for most categories with some “exceptional” and “needs work” ratings mixed in. The results were much closer to the expectations of faculty for P2 student performance. **Implications:** The results indicate the importance of giving students an anchor from which to set their expectations for peer performance as well as explicit permission to say when something needs work. The process will be repeated this spring to see if this approach further develops peer assessment skills and to determine whether multiple peer judges are needed.

Student Self-assessment of Motivational Interviewing Skills. Rebecca M. Widder, *Cedarville University*, Juanita A. Draime, Thad Franz, *Cedarville University*, Mark Pinkerton, *Cedarville University*, Douglas Anderson, *Cedarville University*, Aleda M. Chen, *Cedarville University*. **Objectives:** ACPE standards emphasize developing student ability to accurately self-examine knowledge and skills. This study aimed to determine if students accurately assess motivational interviewing (MI) skills by comparing student 1) perceived baseline competence before and after educational sessions, and 2) self-assessment and faculty evaluation of MI skills. **Method:** During a second-year Cardiology module, students reviewed MI concepts previously introduced, practiced skills with a trained facilitator, and completed a videotaped standardized patient encounter. A pre- and retrospective post-test survey (13 items, 6 point Likert-type, agreement) assessed student-perceived ease of performing MI skills. Students and faculty evaluated the videotaped encounter using the modified Motivational Interviewing Treatment Integrity (mMITI) instrument. Students were divided into quartiles based on overall faculty mMITI score. Data was analyzed using Wilcoxon signed-rank test and Spearman’s correlation, as appropriate. **Results:** Students’ (N=32, 100% response rate) retrospective assessment significantly declined on 5 items (showing interest $p=0.007$, reflective listening $p=0.030$, permission to share $p=0.011$, patient control $p=0.002$, and open-ended questions $p=0.001$). Students in the upper quartile rated themselves significantly lower on mMITI total score ($p=0.024$) and the empathy/understanding subscale ($p=0.026$). The lower quartile rated themselves significantly higher on every mMITI measure (Total: $p=0.012$, Empathy/Understanding:

$p=0.033$, Spirit and MI Adherence: $p=0.024$) except the open-ended questions subscale. **Implications:** Pharmacy students may have difficulty self-assessing their MI skills. Students with better skills viewed themselves as less competent than faculty did, whereas students with poorer skills viewed themselves as more MI competent than they actually were. This suggests that self-assessment training should be improved.

The Association between NAPLEX Pass Rate and US News and AACP Grant Funding Data. L. Douglas Ried, *The University of Texas at Tyler*, Kara Anazia, *University of Texas at Tyler*. **Objectives:** Compare first time NAPLEX pass rates with pharmacy programs' US News and World Report and AACP grant funding rankings. **Method:** NAPLEX pass rates were obtained from the NABP webpage for 2013 and 2014 and total grant funds were obtained from AACP. Grant funds for 2013 and 2014 were totaled and the institutions were ranked from highest to lowest. The most recent US News and World Report's rankings of pharmacy programs was obtained from the Internet. Programs were categorized as Top 25, unranked, or ranked greater than 25th in both measures. ANOVA was used to compare average passing rates and correlations tested associations among rankings and pass rates. **Results:** The association between the 2013 and 2014 pass rates was 0.73 ($p=0.001$) and 0.75 ($p=0.001$) between the AACP grant funding and US News rankings. Top 25 programs in both rankings had higher pass rates than unranked programs both years. Top 25 AACP funding programs had higher pass rates than those ranked outside of the Top 25, but not in the US News ranking ($p=0.06$). **Implications:** The debate has raged for decades regarding the quality of educational outcomes of teaching and research intensive programs. The validity of the popular US News rankings has been dismissed and touted when convenient. As expected, the popular US News ranking is highly associated with programs' research funding. However, programs unranked in the funding ranking, those ostensibly more focused on students' education, had the lowest average first-time passing rates.

The Association between Physical Activity and GPA among Doctor of Pharmacy Students. Qingqing Xu, *University of Houston*, Sujit Sansgiry, *University of Houston*. **Objectives:** To determine the relationship between physical activity (PA) and GPA **Method:** A self-report survey was conducted. The questionnaire asked about participants' frequency and time spent in vigorous, moderate PA and walking during the past week, attitude towards exercise, major barriers to exercise, cumulative GPA, height, weight, study time, study motivation, learning capacity and demographic characteristics. Weekly energy expenditure in PA (total-MET score) and time spent in PA (total-min) were calculated and used in analysis. **Results:** A total 167 out of 197 participants have complete information for Spearman's correlation analysis. At significance level of .05, there were no correlation between either total-MET ($p=0.1774$) or total-min ($p=0.0574$) and GPA. Student's t-test revealed that students who spent more time in PA had lower GPA ($p=0.0056$). GPA was correlated with BMI ($p=0.0241$) and learning capacity ($p=0.0006$). There were correlation between both total-MET ($p=0.0003$) and total-min ($p=0.0067$), and BMI. Learning capacity was correlated with total-MET ($p=0.0292$) and study time ($p=0.0170$). Total-min was correlated with study motivation ($p=0.0235$). Multiple regression showed no significant association between PA and GPA. **Implications:** GPA was not directly associated with physical activity. Students with lower BMI and higher learning capacity would earn higher GPA. More time or energy expended in PA would negatively affect BMI and positively affect learning capacity. So the impact of PA on GPA was indirect, complex and mediated through students' BMI and learning capacity.

The Relations of Pharmacy Students' Empathy and Psychological Need Satisfaction to Burnout and Psychological Well-being. Eun Cho, *Sookmyung Women's University*, Soohyun Jeon. **Objectives:** To examine the relations of Korean pharmacy students' empathy and psychological need satisfaction (PNS) to burnout and psychological well-being (PWB) using Structural Equation Modeling. **Method:** Participants were 452 pharmacy students from five large universities in South Korea. The Jefferson Scale of Empathy-Health Profession Students version, the Activity-Feeling States scale and the Maslach Burnout Inventory-Student Survey were used to assess students' empathy, PNS and burnout, respectively. Students' PWB was measured with three instruments of the Mood Rating Scale, the Self-Esteem Scale and the Satisfaction With Life Scale. The fits of the measurement model and the structural regression (SR) model with the aforementioned four variables were evaluated using the Tucker-Lewis index (TLI), incremental fit index (IFI), comparative fit index (CFI), and the root mean-square error of approximation (RMSEA) with AMOS 18.0. **Results:** A total of 447 students (98.9%) completed the survey. The measurement model showed adequate fit indices and all hypothesized factor loadings were significant. The proposed SR model also showed an acceptable fit (TLI=.91, IFI=.94, CFI=.94, RMSEA=.068). Each path within the model was supported, except the path from empathy to burnout ($\beta=.005$). Pharmacy students' empathy was positively associated with their PWB ($\beta=-.20$). Students' perceived PNS also related positively to their PWB ($\beta=-.58$), but highly and negatively to their burnout ($\beta=-.71$). The model explained 50% and 45% of the variances of burnout and PWB respectively. **Implications:** Pharmacy students' empathy and psychological needs should be considered in pharmacy education system to promote students' better psychological adjustment.

The Teaching of History of Pharmacy at U.S. Pharmacy Schools. David M. Baker, *Western New England University*, Kelsey M. Leite, *Western New England University College of Pharmacy*, Robert A. Buerki, *The Ohio State University*, Gregory J. Higby, *University of Wisconsin-Madison*, Robert L. McCarthy, *University of Connecticut*, John L. Colaizzi, *Rutgers, The State University of New Jersey*, Clarke Ridgway, *West Virginia University*. **Objectives:** Study objectives were to determine how the 2016 ACPE accreditation standard involving pharmacy history education is met by U.S. schools, whether they wanted to expand on their current commitment, and what pedagogical assistance, if any, was desired. **Method:** All pharmacy school Deans were asked to identify the faculty responsible for pharmacy history teaching in their curriculum. A ten-question online survey was prepared and emailed to the identified faculty or Dean. Follow-ups were sent in two week intervals after a nonresponse. If non-responsive after three requests, a telephone call was placed to attempt oral survey completion. **Results:** 100 schools (75%) responded. 53.4% of the respondents were public schools and 46.6% were private; with class sizes of 100 or less (55.5%), 101-250 (40.8%) and over 250 (8.7%), respectively. 85.6% meet the ACPE requirement by providing the material as part of a required course, 72.2% devoting 1-5 hours to the task. 68.3% do not use literature to support this teaching, and there was no common source of literature among those that do. However, 21.2% expressed desire for more time on these educational efforts, and 91.4% were seeking assistance, varying from a complete package program (26%) to sample syllabi with readings and assessments (23.1%). **Implications:** Since there are no measurable standards of time or materials that should be used to fulfill the ACPE requirements, these results provide a starting point from which to judge what is adequate and/or preferred. With the development of teaching materials, the

solution to this ACPE standard may become more complete and consistent.

The Use of Weekly “Pulse Checks” in a Professional Development Course for Quality Improvement. Bethany Anne Von Hoff, *University of Minnesota*, Kristin K. Janke, *University of Minnesota*, Paul L. Ranelli, *University of Minnesota*, Julie K. Johnson, *University of Minnesota*. **Objectives:** To implement a structured mechanism for weekly student feedback to aid in course quality improvement in an intensive three-week course focused on transitioning students to the Doctor of Pharmacy curriculum and the profession of pharmacy. **Method:** In a new first-year course titled “Becoming a Pharmacist”, students were emailed weekly “pulse checks” designed to assess student engagement and self-reported learning. The 15-item instrument included 9 student engagement items on attention, contributions and involvement, as well as 6 student learning items based on the six dimensions of Fink’s taxonomy of significant learning. Respondents used five and six point, strongly agree (1) to strongly disagree (5 or 6) ratings for the engagement and learning items, respectively. Results were analyzed using descriptive statistics and Friedman’s test. **Results:** Enrollment was 167 students. Response rates ranged from 88% to 94%. Over the three weeks, there were no significant differences in “I contributed meaningfully to the course” (80%-week 1, 85%-week 2, and 79%-week 3, $p=0.11$). On average, there was stronger agreement on ratings for Learned More About Myself and Others (mean=1.88) and Began to Care More or Differently About the Subjects (mean=2.15) than Learned More About How to Learn (mean=2.51). The “pulse checks” resulted in immediate changes (e.g., more student friendly course website) and longer-term changes (e.g., reorganizing activities into weekly themes). **Implications:** Faculty should consider the use of frequent, informal evaluative tools to gauge student engagement and learning outcomes to adjust course material and delivery, especially in new courses or courses with non-traditional structures.

The Impact of Small Group Facilitation on Student Confidence in Motivational Interviewing Skills. Juanita A. Draime, Rebecca M. Widder, *Cedarville University*, Thad Franz, *Cedarville University*, Mark Pinkerton, *Cedarville University*, Douglas Anderson, *Cedarville University*, Aleda M. Chen, *Cedarville University*. **Objectives:** To determine if facilitating small group sessions impacts student facilitator confidence in utilizing motivational interviewing (MI) skills and perceived skills. **Method:** Pharmacy students are often utilized in educational settings to facilitate or assist with courses, but little is known how this impacts outcomes. Six P3 students underwent a two-day MI training course as well as small group facilitation training. After IRB approval, the students were randomly assigned to a small group of P2 pharmacy students in a Cardiology Module and asked to facilitate practice of MI skills over 4 hours. The student facilitators completed a pre-post instrument, which contained 6-point, Likert-type items assessing their confidence (19-items) and perceived (13-items) MI skills. Differences between pre- and post-surveys were assessed using a Wilcoxon test. **Results:** There were significant increases in facilitator confidence in using silence ($p=0.038$), eliciting change talk ($p=0.039$), helping patients set achievable goals ($p=0.023$), assessing readiness to change ($p=0.014$), and confidence in using MI skills in a case scenario involving hypertension ($p=0.039$). Additionally, there was a statistically significant increase in facilitator assessed ability to use reflective listening ($p=0.046$) and summarize what patients are saying ($p=0.038$). The remaining 25 survey items showed no change between pre-and post-survey. **Implications:** Participation as a facilitator has a positive impact on student confidence and ability to use some aspects of MI skills. By using pharmacy

students as facilitators, it can provide an outlet for students to develop communication and facilitation skills that will be needed in future practice.

The Role of the Pharmacist in Adherence to Antiretroviral Therapy in Patients of Caribbean Descent. Akasha Edwards, *Nova Southeastern University*, Randi Agata, *Nova Southeastern University*, Silvia Rabionet, *Nova Southeastern University*. **Objectives:** The development of anti-retroviral therapy (ART) has led to improved clinical and health outcomes. Medication adherence is critical to the efficacy of ART and pharmacists can have a significant impact in this area of HIV patient care. The current objective of this study is to assess the role of the pharmacist in HIV medication adherence. **Method:** This was a cross-sectional study using face-to-face interviews conducted at an infectious diseases clinic in Hollywood, FL. The convenient sample ($n=115$) included adult patients diagnosed with HIV/AIDS, experienced with ART, and either a Caribbean island native or the first generation born of a Caribbean island native. Patients were asked to list the top 3 providers that helped the most with their HIV drugs. Adherence was measured by a 3 day self-report recall. Adherent patients were those who did not report missing any of their doses in the last 3 days. Descriptive analyses will be used to discuss the findings specific to the objective. **Results:** Ninety four percent of patients were adherent with an overall adherence rate of 98% (SD 11.21). Approximately 15% of the population chose the pharmacist as a provider who helps with their medication. 59% of patients had undetectable viral load readings. **Implications:** Adherence to ART is relatively high in this population. However a significant proportion of patients do not have an undetectable viral load, which is one of the key goals of ART. There is a need for pharmacist intervention to help improve adherence and ultimately improve therapeutic outcomes in this population.

Three Schools, Five Years of Data: An Update on NAPLEX and MPJE Performance Determinants. Fadia Shaya, *University of Maryland*, Lisa Lebovitz, *University of Maryland*, Lauren S. Schleselman, *University of Connecticut*, Shauna M. Buring, *University of Cincinnati*. **Objectives:** To identify the determinants of stronger performance on the NAPLEX and MPJE among Doctor of Pharmacy graduates of three schools in the last five years. **Method:** Admission characteristics and data were collected from University of Maryland, University of Cincinnati, and University of Connecticut for 1,301 PharmD graduates over the years 2011-2015, who took both the NAPLEX and MPJE. Multiple regression analysis was used to evaluate the association of higher scores on the two licensing examinations with these predictors - school, age at admission, gender, prior degrees, GPA at admission, PCAT subtest scores, geographic location, graduating class year, and final PharmD GPA. **Results:** The overall mean percentage passing rate ranged from 96.1% to 98.9% for NAPLEX and from 89.4% to 99.5% for MPJE. Factors significantly associated ($p<0.05$) with higher NAPLEX and MPJE scores are more recent graduating years, PCAT reading comprehension subtest score ($p=0.0432$ (NAPLEX); $p=0.0025$ (MPJE)), and final PharmD GPA (both exams: $p<0.0001$). Controlling for other factors, age group of ≥ 25 years, male gender, and higher PCAT chemistry subtest score are significantly associated with higher NAPLEX scores (all $p<0.001$). MPJE eligibility states from Midwest were significantly associated with higher MPJE scores ($p=0.0025$). **Implications:** Future studies should explore school-related characteristics, the effectiveness of curricular changes, and provision of student support services that may positively impact NAPLEX and MPJE scores for pharmacy students, especially those who are admitted with low PCAT subtest scores in reading comprehension and chemistry.

Using PCAT Scores to Explain Academic Performance in a 3-year PharmD Program. Stephen Lee, *Roseman University of Health Sciences*, Elizabeth J. Unni, *Roseman University of Health Sciences*, Helen C. Park, *Roseman University of Health Sciences*. **Objectives:** The Pharmacy College Admission Test (PCAT) is currently used by 85% of the US colleges of pharmacy for admission. Except for one study conducted by the publisher of PCAT, all other studies that have examined the validity of PCAT in predicting academic success were based on 4-year programs. The objective of this study was to determine the utility of PCAT, especially the composite and language arts subtest scores, in predicting academic performance in a 3-year PharmD program. **Method:** The study population consisted of 768 PharmD students who graduated in 2014, 2015, and 2016. The admission criteria collected were PCAT scores – composite, verbal, reading, and essay; GPA – overall, pre-requisite, and science; bachelor's degree or not, and average interview score. The academic performance was calculated as a percentage (total points scored by the student/the total possible points) for each student for P1 and P2 year. Linear multiple regression analysis with bootstrapping was used to analyze the data. **Results:** For both P1 and P2 academic performance, when regressed against only the PCAT scores, verbal and composite were the significant predictors ($R^2=7\%$ for P1 and 2.4% for P2 year). When GPA(s), bachelor degree, and average interview score were added, the science GPA was also significant for the P1 year, and the overall GPA for the P2 year ($R^2=0.1\%$ for P1 and 5.6% for P2 year). **Implications:** PCAT composite and language arts subtest scores have moderate predictive validity for academic performance in a 3-year PharmD program, especially for the P1 year.

Using the Strengths Self-Efficacy Scale to Assess Pharmacy Students' Self-Confidence in Applying their Personal Strengths. Robert Bechtol, *University of Minnesota*, Kristin K. Janke, *University of Minnesota*. **Objectives:** To (1) examine the psychometric properties of the Strengths Self-Efficacy Scale (SSES) and (2) assess students' responses to it. **Method:** One hundred sixty-four first year pharmacy students completed an online questionnaire as part of a professional development course. Students responded to eleven statements regarding the application of strengths (i.e. talents) in various settings and under varying circumstances using an 11-point scale [0 (not at all confident), 5 (moderately confident), and 10 (extremely confident)]. Reliability was tested using Cronbach's alpha. Factor analysis was conducted to identify factor structure. A total strength self-efficacy score was calculated. Levels of strengths self-efficacy were categorized as low (scores of 30 to 76), moderate (scores 77 to 87), and high (scores 88 to 110). **Results:** The SSES showed good internal consistency, with a Cronbach's alpha coefficient of .961. Factor analysis yielded one dominant factor, explaining 72.54% of the total variance. Total strength self-efficacy scores ranged from 30 to 110 with a mean of 80.92. Respondents reported the most confidence in "using their strengths to help them achieve their goals in life" (mean=7.62) and the least in "using their strengths without any struggles" (mean=6.93). Based on total scores, 41.5% of the respondents' scores fell within the highly confident range while 32.3% fell within the low confident range. **Implications:** This administration of the SSES reported similar psychometric properties as in previous literature outside of pharmacy. Pharmacy educators can use the findings to further target advising and curricular efforts aimed at helping students use and refine their strengths.

Using the World Café Method to Build a Community of Practice among Women in Pharmacy. Claire Kolar. **Objectives:** To deliver a series of participant-driven programs to begin building a local community of practice of women engaged in leadership. **Method:** Five

World Café sessions were held over six months with invitees from various career stages, including students, residents, pharmacists and faculty. Each session was based on one of five themes from the book *How Remarkable Women Lead* (Meaning, Framing, Connecting, Engaging, and Energizing) and consisted of a guest speaker with leadership experience (15 minutes) followed by two rounds of World Café discussion (40 minutes total). The World Café method uses carefully crafted questions to help participants learn from one another's experiences and create meaningful dialogue on important issues. Mid-point and final evaluations were administered. Descriptive statistics were calculated and content analysis was performed on available text. **Results:** The sessions were attended by thirty-six (36) women, with 23 women attending more than 2 sessions. The final evaluation was completed by twenty (20) participants and all respondents (100%) agreed/strongly agreed, "I felt community was created among the participants" and "I am inspired to continue to develop as a leader." In addition, 23 women attended the final session and one theme from the session's documentation was "a continued focus on community is needed." **Implications:** The World Café can be used in educational settings to bring together a diverse group of learners focused on a common goal to learn from one another. A series of World Café events can contribute to building a community of practice, while also advancing the individual development of each participant.

Utility of a Pharmacy Student Organization Leadership Retreat. Elizabeth J. Unni, *Roseman University of Health Sciences*, Erin L. Johanson, *Roseman University of Health Sciences*, Vijay Kale, *Roseman University of Health Sciences*, Venkata K. Yellepeddi, *Roseman University of Health Sciences*. **Objectives:** The Accreditation Council for Pharmacy Education guidelines explicitly recommends opportunities for leadership development in pharmacy students. The objective of this study was to determine the perceived utility of a leadership retreat for the student organization leaders in PharmD program. **Method:** The author's pharmacy school hosted a leadership retreat for the 2015 -2016 student leaders in 2015 Spring. The six-hour retreat was designed by the student organization faculty advisors and included several talks from local pharmacy leaders and school alumni and case studies based on "The Five Dysfunctions of a Team". The usefulness of the retreat was measured using an anonymous pre-post survey with 6 items on the value of the retreat and 17 items rating self-perceptions of leadership qualities, in addition to the open ended questions. **Results:** Of the 25 student leaders, 22 accepted the invitation, 17 answered the pre-retreat and 11 answered the post-retreat survey. All students agreed with the statements that measured the value of the retreat both pre-and post-retreat. The results show distinct shifts in some of the answers (e.g. Retreat will help me become a better pharmacist) from "neutral" to "strongly/absolutely agree". There was also a positive shift for the items that measured the perceptions of leadership qualities. The open ended questions had several comments such as "It helped build a foundation for a shared leadership vision for next year". **Implications:** Administrators invested in supporting pharmacy student leadership would likely find similar benefits by providing such an event.

Utilization of a Hybrid (Face-to-Face and Online) Orientation Model for PY1 Pharmacy Students. Ellyn K. Couillard, *University of South Florida*, Heather MW Petrelli, *University of South Florida*. **Objectives:** The USF College of Pharmacy (USF COP) transitioned to a hybrid orientation model to maximize retention of information, increase efficiency, and minimize required financial and human resources. **Method:** Utilizing feedback from yearly

student evaluations of the face-to-face orientation, scores on the orientation assessment, and feedback from administration, the Office of Student Affairs and Assessment (OSAA) determined which sessions would be best administered online. OSAA intended to create orientation programming to mirror the flipped and hybrid courses existing in the didactic curriculum. Sessions moving to the online platform included technology, interprofessional education, overview of student services, curriculum, experiential education, shared student services, and financial aid. All modules were added to a Canvas course and each online module included an assessment. **Results:** Pearson R correlations were conducted between orientation evaluations from the current class and previous classes. Pearson R correlations were also performed between orientation assessment quizzes from the current class and previous classes. Qualitative faculty and staff feedback indicated a positive change. Finally, Pearson R correlations were conducted between online module assessments and GPA and End of Semester Capstone Exam (EOS) grades to determine relationship. Small and medium relationships ($p=.17-.31$) were identified between orientation module assessments and academic success in the program as measured by first semester GPA and the EOS exams. **Implications:** More research needs to be performed on the effectiveness of hybrid models of orientation. The relationships between scores on module assessments and academic success also require further investigation regarding the predictive validity of effort during orientation to academic success.

Theoretical Models

Application of Asymmetric Information Theory to Pharmacists' Preference of OTC Medications. Mira Patel, *The University of Arizona*, Marion K. Slack, *The University of Arizona*, Janet H. Cooley, *The University of Arizona*, Sandipan Bhattacharjee, *The University of Arizona*. **Objectives:** Consumers often pay a premium to purchase brand name products rather than generic products. Within economic theory, this behavior is attributed to asymmetric information; that is, consumers lack information indicating that the products are equivalent whereas experts, such as pharmacists, are assumed to have that information. The purpose of this study was to use asymmetric information theory as a framework to examine pharmacists' preference for brand or generic OTC medications. **Method:** A cross sectional study was conducted with 553 licensed pharmacists asking them to indicate their preference for 31 generic or brand OTC products and to indicate on an 11-point scale how likely they were to use OTC medications to treat symptoms including aches, allergies, cough, acid reflux, insomnia, cold and flu, and pain. Frequency counts of pharmacists' preference of medications overall and for each symptom were calculated. Chi-squared analyses and one-way ANOVA were conducted to determine if there were any differences between the preferences of OTC medication types across each symptom. **Results:** Overall, pharmacists preferred generic OTC medications to brand OTC medications (62% to 5%, respectively). Pharmacists were likely to take OTC generic medications when presented with health symptoms (mean=7.32 +2.88). In addition, pharmacists consistently chose generic OTC medications over brand medications for all health symptoms ($p<0.001$). **Implications:** Pharmacists who have expertise in medications were shown to prefer using generic OTC medications rather than brand name OTC medications for self-treating a variety of health symptoms. These study findings support the theory that expertise affects preference for generic versus brand name OTC medications.

Challenges and Opportunities for Integrating Public Health into Pharmacy Curricula. Mark A. Strand, *North Dakota State University*, Jeanine P. Abrons, *The University of Iowa*, Katura C. Bullock, *University of North Texas System*, John M. Conry, *St. John's University*, Jordan R. Covvey, *Duquesne University*, Natalie A. DiPietro Mager, *Ohio Northern University*, Jeffery A. Goad, *Chapman University*, Negar Golchin, *University of Washington*, Radha Patel, *University of South Florida*, Hoai-An Truong, *University of Maryland Eastern Shore*. **Objectives:** The goal of public health is to improve the health of communities through disease prevention/health promotion, research, education and policy. The pharmacy profession's contribution to this is growing significantly, and to prepare the next generation of pharmacists, colleges/schools must incorporate public health education into their curricula. The objective of this work was to develop a model examining the challenges/opportunities for integration of public health into pharmacy curricula. **Method:** Pharmacy educators from the AACP Public Health SIG engaged in public health curriculum delivery across several schools identified contributors to the intersection of public health and pharmacy through an iterative process involving literature review, in-depth qualitative discussion and collaborative creation. Motivators for integration, challenges to inclusion, areas for inter-professional collaboration and assessment of intended outcomes were examined and developed into a curricular model. **Results:** A significant number of entities were identified as key influences upon public health. Motivators like the NAPLEX blueprint, CAPE outcomes and Standards 2016 encourage public health education. Guidance for collaboration exists from the IPEC Core Competencies and the APTR Clinical Prevention and Population Health Curricular Framework. Main challenges for integration are time and faculty expertise. The intended outcome is the integration of public health in pharmacy curricula, ultimately with the improvement of patient health outcomes. **Implications:** A model describing these elements is needed for successful integration of public health into pharmacy curricula; the process by which these elements would take effect could be used as a road map for curricular design/assessment.

Development and Implementation of a Mock Trial as Final Exam in Required Evidence-Based Practice Course. Hoai-An Truong, *University of Maryland Eastern Shore*, Ettie Rosenberg, *West Coast University*, Reza Taheri, *West Coast University*. **Objectives:** To describe the design, development, and implementation of a mock trial as final exam in a required Evidence-Based Practice course for first year students. **Method:** Designed as semester-long team project, the mock trial served as an oral exam worth 20% of course grade. Forty-two students were divided into teams to advocate for or against two topics: pharmacist provider status and "aspirinated" water for cardio-protection. The two separate four-hour trials included roles for counsel for opening/closing statement and direct/cross-examination; witnesses and jurors. Each student was required to speak for three minutes. Students applied knowledge, skills, and attitudes in literature critique, advocacy, and communication. Students in provider status trial served as jurors in the "aspirinated" trial, and vice versa. Six faculty/judges assessed (70% weight) students' performances using eight specific criteria. Twelve students/jurors evaluated (30% weight) their classmates in the alternate trial using identical criteria. Teammates evaluated each other's engagement (peer evaluation) using seven criteria. Descriptive statistics were used to analyze scores. Institutional Review Board approval was received from West Coast University. **Results:** Average scores in the provider status trial were: judges: 56/60 (93.3%) with a range of 54-58 (90-96.7%); jurors: 55/60 (91.7%) with a range of 55 (91.7%). Average scores for the "aspirinated" water trial were: judges: 52/60 (86.7%) with a range of 51-53 (85-88.3%); jurors: 56/60

(93.3%) with a range of and 55-57 (91.7-95%). **Implications:** Students' performance on oral exam demonstrated mock trial as active learning and assessment strategy benefits students' learning. Subsequent offerings can provide further insights to fine-tune this activity.

Inspiring and Preparing Student Pharmacists for Professional Advocacy. Daniel A Pearson, *Nova Southeastern University- Davie Campus*, Nour Samra, *Nova Southeastern University- Davie Campus*, Stephanie A Gomez, *Nova Southeastern University*, Jennifer C Lee, *Nova Southeastern University- Davie Campus*, Irina Dergacheva, *Nova Southeastern University- Davie Campus*, Farley Saint-Louis, *Nova Southeastern University- Davie Campus*, Stephanie A Gernant, *Nova Southeastern University- Davie Campus*. **Objectives:** To improve future advocacy experiences by colleges of pharmacy, the methods utilized to prepare student pharmacists for the 2016 Florida Legislative Day and ultimate results are shared. NSU College of Pharmacy began participating in Legislative Days, an annual period when student pharmacists attend Florida's State Capitol for professional advocacy, in 2002. However, minimal information on successful preparation techniques for advocacy events exist. **Method:** This case report describes student pharmacists' preparedness and engagement prior, during and after Legislative Days. Preparatory events were directed by a self-identified six member organizational committee. The committee set legislative appointments, organized letter writing campaigns, and matched students to their respective legislators. Didactic lectures describing legislative processes, pertinent bills, and methods to engage representatives was delivered by a District Executive Secretary and faculty members. Students created talking points for bills and completed mock-appointments with faculty. Immediately after appointments, students conducted recorded group debriefs. **Results:** Fifty seven students attended Legislative Day, for a 35.9% increase from the previous year. Students scheduled more visits than any other local college of pharmacy (n=17) for nearly a four times greater number of appointments than the previous year. Appointments comprised of 8 Florida House Representatives, 1 US Florida Senator, 7 Florida State Senators, and a Presidential Candidate. Fourteen visits were with legislators themselves, while three were with legislative aids. **Implications:** Student pharmacist early engagement and increased awareness of legislation is instrumental for effective advocacy.

Psychosocial Aspects of Epilepsy: The Most Stigmatized Illness of All? James M. Nesbit, *Harding University*, James M. Nesbit, *Harding University*. **Objectives:** INTENT: To apply a qualitative framework, the CLERTS framework, as an educational tool applied as a psychosocial analysis of Epilepsy to reveal an "illness" perspective rather than the typical "disease" perspective. Application of the CLERTS framework of "Culture, Lifestyle, Environmental, Relational, Transcendent, and Self" will reveal how Epilepsy may be THE most stigmatized illness of all. **Method:** PROCESS: Apply the CLERTS framework to teach students how to use a "top down" approach in contrast to the more commonly used "bottom up" approach for the analysis of the psychosocial aspects of epilepsy. **Results:** OUTCOMES: By using the CLERTS application, we readily see that the quality of life for patients with Epilepsy is very poor. Despite the clinical prognosis of the "disease," it is the social prognosis of Epilepsy that makes this illness so devastating. **Implications:** IMPLICATIONS: Psychosocial aspects of illnesses are a burgeoning and area of study involving pharmacy students. The CLERTS framework has been developed as an important way to discover the myriad of non-biomedical issues impacting an illness. CLERTS is novel approach because it provides a foundation for students to see an illness from the patient's perspective. As the profession transforms into a more relational field, pharmacy students

should be ready to provide patient care based on the their knowledge of the psychosocial aspects of their patients, as well as clinical data which expands Pharmaceutical Care into a more comprehensive encounter.

The Moderating Power of Impulsivity: A Thorough Literature Review Examining the Theory of Planned Behavior. Lindsey Hohmann, *Auburn Univ. Harrison School of Pharmacy*, Kimberly B. Garza, *Auburn University*. **Objectives:** The Theory of Planned Behavior (TPB) states that behavioral intention is the best predictor of actual behavior change. Of specific interest is the question of which variables can be leveraged to moderate or mediate the TPB in order to aid health promotion interventions utilizing the tenets of behavioral economics (delay discounting, commitment contracts, and others). Impulsivity has been postulated to fill this role, and is uniquely suited to application in behavioral economics. Accordingly, our objectives are to determine if impulsivity moderates the association between intention and actual behavior, and to discover what other variables may moderate or mediate this association. **Method:** A thorough literature review was conducted using PubMed and PsychINFO online databases. Google Scholar was utilized via a snowballing method. Studies written in English and utilizing a systematic review, meta-analysis, cross-sectional survey, pre-post, time series, cohort, case-control, other quasi-experimental, or randomized controlled design in peer-reviewed journals published prior to November 2015 were selected. **Results:** Three main concepts emerged from this review: 1) impulsivity moderates intention and behavior change; 2) self-efficacy moderates intention and behavior change; and 3) planning and self-efficacy contribute to moderated mediation. **Implications:** This review demonstrates a gap in the literature regarding the application of the TPB to medication adherence and prescriber providing habits. Future studies in behavioral economics may leverage the variables of impulsivity, self-efficacy, and planning to predict follow-through in these areas. This will then allow for the development of targeted change initiatives using tailored commitment contracts or other novel incentivized actions.

2015-2016 ACADEMIC RESEARCH FELLOWS PROGRAM

A Survey of Presubmission Grant Support Mechanisms in Colleges and Schools of Pharmacy. Walter Fast, *The University of Texas at Austin*, John Richburg, *The University of Texas at Austin*, Kirsten F. Block, *American Association of Colleges of Pharmacy*, Rochelle Roberts, *The University of Texas at Austin*. As part of a larger effort to identify effective methods to enhance infrastructure supporting faculty research programs, we present a planned survey of presubmission grant support programs offered by a selection of U.S. colleges and schools of pharmacy. The goal of this project is to provide a benchmark of the breadth and extent of presubmission grant preparation support currently offered by U.S. colleges and schools of pharmacy. Approximately sixty colleges or schools of pharmacy that each have a faculty or administrator designated for research and grant oversight (e.g. directors, vice presidents, or assistant / associate deans for research) are targeted to receive a web-based survey and to serve as a representative sample of research-active pharmacy programs. A series of prescribed and open-ended questions were designed to gather information on seven different types of presubmission grant preparation support mechanisms: 1) administrative structure and support, 2) general grantsmanship, 3) identifying grant opportunities, 4) developing and editing scientific content, 5) meeting internal college / university requirements, 6) protecting intellectual property, and 7) developing metrics for evaluation of these mechanisms. Responses, including self-evaluations of perceived efficacy for each

support mechanism, will be collected, summarized, and submitted as a peer-reviewed publication for timely dissemination. We anticipate that this work will be useful as a guide for programs developing or enhancing infrastructure supporting faculty research in pharmacy.

Building an Interdisciplinary Research Team for Community Pharmacy-Based Innovation. Donald G. Klepser, *University of Nebraska Medical Center*. One challenge faced by pharmacy practice researchers is developing an interdisciplinary research team that allows for ongoing collaboration and the development of programmatic research initiatives. In many cases, this includes a diverse set of stakeholders including providers, payers, administrators, and researchers. This challenge is particularly important in community pharmacy-based research, where stakeholders are likely to come from a variety of organizations (e.g., pharmacy chains, payers, health systems) with differing goals and incentives. The objective of this Academic Research Fellowship Program project was to develop the infrastructure for an ongoing community pharmacy-based research center that aims to develop and implement innovative and sustainable practice models. To achieve this objective, the focus has been on creating opportunities for stakeholder engagement that can also be used to build a long-term team of collaborators. Specific opportunities include an existing journal club attended by university, managed care, industry, and health network representatives. The journal club focuses on policy-related topics and includes discussions on relevant research opportunities. Additional approaches include informal research roundtable discussions and the identification and application of specific grant opportunities of interest to the group. To date, these opportunities have identified a diverse group with strong interest in innovative practice models. Future steps in creating an ongoing research team include formalizing involvement, including data sharing and non-disclosure agreements, so that the group can more easily identify and seek funding.

Developing an Assessment Plan for the Newly Established Interdisciplinary Biomedical Sciences Graduate Program at the University of Wyoming. Sreejayan Nair, *University of Wyoming*, Derek Smith, *University of Wyoming*, William Flynn, *University of Wyoming*. The University of Wyoming initiated a comprehensive, interdisciplinary Biomedical Sciences Graduate Program in 2010. This program was designed to address important workforce demands for doctoral level biomedical research expertise and to position graduates for long-term competitive success in the rapidly changing and multifaceted health-related arena. Housed in the School of Pharmacy, this program includes faculty mentors from the Colleges of Agriculture and Engineering. Currently, there is a need to develop tools to systematically assess the program so as to obtain a tier-status that dictates internal/state funding for the program and thus controls its sustenance and growth. The objectives of this project were: 1) to develop student learning outcomes (SLO) to be used in program assessment; and 2) to develop a curriculum map to ascertain that the SLOs are met. The specific SLOs identified are: 1) by graduation, students will have an advanced understanding of the core topics in biomedical sciences (Knowledge); 2) students are able to communicate effectively both orally and in writing their results and that of others (Communication); and 3) students publish their research in peer-reviewed journals and present their findings at conferences (Scientific Proficiency). To this end, a rubric will be developed and made available to the faculty and students to assess the SLOs on a periodic basis. Additionally, core courses and seminars will be reviewed periodically to assess students' mastery of the material. The outcomes

of the SLOs will be evaluated to identify/implement curricular changes to better meet the goals of the program.

Development of a Community-Based Interdisciplinary, Team-Based Research Program: Initial Steps. Daniel Touchette, *University of Illinois at Chicago*. **Introduction:** In the community setting, healthcare is provided by a variety of clinical practitioners, including physicians, pharmacists, nurse practitioners, physician assistants, dietitians, and physical therapists. Many potential adversities impact patients in this setting, including poor care coordination, multiple and sometimes discordant messages, and unnecessarily complex processes needed to receive basic care. The occurrence of iatrogenic disease, errors, and inefficient practice is well documented. The complexity of care coordination in the community setting requires involving practitioners and researchers from pertinent disciplines. To date, few research initiatives have engaged the breadth of expertise needed to effectively develop and evaluate models addressing these issues. This presentation illustrates initial steps and issues associated with the development of an interdisciplinary, team-based research program designed to address issues facing community-based practitioners and patients. **Methods:** Descriptive case study of the development of an interdisciplinary, team-based research program. **Results:** Initial steps included strategic planning to identify research opportunities, identification of core researchers, team training, and engagement of other researchers and clinicians. Identification of needed resources and planning of an infrastructure to enhance research proposals was a high priority in the development of the research program. Future plans include developing and enhancing engagement of other local, state, and national stakeholders, including businesses, government, and other healthcare systems. Continuous process improvement principles will be utilized to assess and augment the resulting team-based program. **Conclusion:** The development of a community-based interdisciplinary, team-based research program will potentially alleviate the burdens associated with uncoordinated care and ultimately improve patient outcomes.

Development of a Drug Discovery Course for the Pharmacology and Toxicology Graduate Program. Richard R. Vaillancourt, *The University of Arizona*. The pharmaceutical and pharmacy professions are undergoing dynamic changes due to advances in technology and global markets. As pharmacy educators, it is critical that curricular content and laboratory training meet these evolving demands. In the Pharmacology & Toxicology Graduate Program at the University of Arizona, students are offered a broad range of courses in both pharmacology and toxicology, but little is taught in the area of drug discovery. Yet, many of the graduates proceed to post-doctoral training and then attain industry positions, where prior training in the field is invaluable for career success. The goal of this Academic Research Fellows Program project is to develop a drug discovery course that will provide training in this much-needed area. The course will cover topics ranging from drug target identification, toxicological assessment of new drugs, drug formulation, to the economics of drug pricing. This course will be a required course within the Pharmacology & Toxicology curriculum and will also be offered campus-wide to students from other graduate programs.

Development of Graduate Education and Team Science Research at Roosevelt University College of Pharmacy (RUCOP): An AACP Academic Research Fellow Program (ARFP) Project. Moji Christianah Adeyeye, *Roosevelt University*. The first aim was to develop Master of Science (MS) in Biopharmaceutical Technology Concentration under existing Biotechnology/Chemical Sciences (BTCS) in Biological, Chemical and Physical Sciences (BCPS) department in the

College of Arts and Sciences as a joint initiative with department of Biopharmaceutical Sciences (BPS) at RUCOP. The objective was to build on the overlap between the existing BTCS program in BCPS, and the pharmaceutical sciences courses in BPS, maximizing resources and faculty potential. The second aim was to develop team science at RUCOP. The objectives are to foster collaboration among clinical, health outcomes and basic pharmaceutical sciences faculty, to train PharmD and MS students in biopharmaceutical and clinical research, and to obtain a T35 (short-term summer research training) award from National Heart, Lung and Blood Institute (NHLBI). For the first aim, after respective college approvals, and iterations of the curriculum, the MS program proposal was submitted to the University Graduate Council. It received approval for Fall 2016 start date. Faculty from both colleges will pair up to mentor students. To develop team science, meetings are held to plan research and build grant proposals. All students will be screened for summer research with a new multidisciplinary approach from the faculty. Students will be trained in responsible conduct of research, drug design and synthesis, pharmacology, toxicology, pharmacokinetics, drug metabolism, drug delivery and development, clinical and health outcomes. The expected outcomes are enhanced capacity of faculty in graduate education, and students that are competent in designing, performing and evaluating research work.

Development of Online Master's Degree and Certificate Programs at a School of Pharmacy. Werner J. Geldenhuis, *West Virginia University*, Altaf S. Darvesh, *Northeast Ohio Medical University*. The global market has changed over the past several years such that internet-based degree programs have become a standard method for career advancement. Although online programs have been in existence for several career fields, these programs are underutilized by the academic pharmacy community, with few programs available to augment practicing clinicians' education. Here we describe the development of online master's degree and certificate programs which are geared toward the practicing pharmacist. The master's degree programs are non-thesis based which allows for a distance model of education. Similarly, the certificate programs are designed to cover smaller topics which are more specialized. In concert with the development of the programs, we describe some of the online tools needed to establish a functioning online degree program, and importantly the financial aspects of establishing as well as running these types of programs. Lastly, the projected effort by existing faculty are investigated in relationship to workload and potential benefits which they may gain from this experience.

Enhancing Research Productivity of Harrison School of Pharmacy by Establishing a Center for Translational Neuroscience and Related Disorders. Vishnu Suppiramaniam, *Auburn University*, R. Lee Evans, *Auburn University*, David Riese, *Auburn University*. The Harrison School of Pharmacy (HSOP) has sought to increase extramural-funded research activity through investments in research infrastructure and targeted recruitment of faculty researchers. While these efforts have been successful, here we propose to further leverage these investments by establishing a campus-wide Center for Translational Neuroscience and Related Disorders (CTNERD). The creation of this center is justified by survey results indicating that 36 Auburn University faculty who possess neuroscience or neurological disease research expertise would participate in such a center. The proposed CTNERD will feature several activities to foster extramurally-supported neuroscience and neurological disease research: 1) monthly CTNERD meetings and a monthly CTNERD seminar series will create awareness of the scope of neuroscience and neurological disease research on

campus, fostering interdisciplinary collaborations and multi-investigator applications for extramural funding; 2) CTNERD members will be given priority access to HSOP research infrastructure, including core facilities operated by HSOP; 3) CTNERD will be provided with administrative support to create and operate an interdisciplinary neuroscience graduate program; 4) CTNERD will form intramural peer review teams to provide pre-submission reviews of manuscripts and grant applications; 5) CTNERD members will be given administrative support to develop multi-investigator grant applications, particularly program project grants and training grants; and 6) CTNERD will pursue new campus-wide faculty hires through the existing Auburn University faculty cluster hire initiative. Overall, these proposed activities will create a center that serves as a nodal structure that fosters and organizes neuroscience and neurologic disease research and graduate education throughout Auburn University.

Scholarship among Pharmacy Practice Faculty: Evaluating the Impact of Collaboration. Bryan L. Love, *University of South Carolina*, Richard M. Schulz, *University of South Carolina*. **Introduction:** Scholarly activity is a universal expectation of faculty members among colleges and schools of pharmacy. Traditionally, pharmacy practice faculty have contributed significantly to the biomedical literature. In recent years as the scale and complexity of scientific research has increased, there has been a shift toward collaborative research, often referred to as "team science." The extent to which pharmacy practice faculty members collaborate and the impact of collaboration on publication is currently unknown. **Objectives:** The objectives of this Academic Research Fellows Program (ARFP) project are to: 1) quantify scholarly activities during a two-year period (2014-2015); and 2) explore factors, including the effect of collaboration, that influence scholarly productivity among pharmacy practice faculty. **Methods:** A random sample of pharmacy practice faculty members will be identified using the American Association of Colleges of Pharmacy (AACCP) roster. Faculty will be stratified by academic rank and institution type (public/private). A survey instrument will be developed to obtain information on three broad content areas: 1) scholarship output; 2) factors influencing productivity (e.g. time, personal attributes, collaboration); and 3) demographic information. Multivariate regression analyses will be used to identify predictors that influence increased scholarly productivity. **Implications:** This survey has the potential to inform the academy on scholarship among pharmacy practice faculty and may provide ideas for programs or initiatives that may increase faculty scholarly productivity.

Towards the Development of an Office of Technology Transfer at a Small Liberal Arts University. Ronny Priefer, *Western New England University*. In 2011, Western New England University (WNE) made the transition from "college" to "university," and in doing so began to place a greater emphasis on the need for undergraduate research. In its 97 year history, only 165 manuscripts in STEM disciplines have been published, of which 147 have been published since the transition. To move forward, a stronger research and innovation infrastructure is needed for further advancement. WNE has begun this by making a commitment to advance the entrepreneurial spirit of its employees. Significant monies have been invested on patenting technologies and ideas; however, until the IP is sold or licensed the University is only incurring costs and not earning any income. With the support of the WNE Provost, College Deans, and Board of Trustee Members, proposals have been developed to enter the arena of Technology Transfer. This poster shall outline two of these proposals which are currently being considered for implementation.

2014-2015 NEW INVESTIGATOR AWARD WINNERS BIOLOGICAL SCIENCES

Altered DNA Hydroxymethylation in a Mouse Model of Prostate Cancer. Victoryn S. Williams, *Western New England University*, Matthew D. Aguilera, *Western New England University*, Jeffrey R. Rovatti, *Western New England University*, Jessica N. Barnet, *Western New England University*, Shannon R. M. Kinney. *Western New England University*. **Objectives:** We previously studied the epigenetic modification DNA methylation (5mC) in a mouse model of prostate cancer (TRAMP) and found that altered 5mC correlates with changes in gene expression that promote prostate cancer progression. It was recently discovered that DNA methylation is oxidized by the Ten Eleven Translocation (Tet) enzymes to 5-hydroxymethylcytosine (5hmC). Current knowledge suggests that 5hmC may have unique functions in transcriptional regulation. However, it is unknown whether 5hmC is altered during prostate cancer progression or what the consequences of these changes would be. **Methods:** We utilized the TRAMP model to examine 5hmC patterns, in normal prostate and prostate tumors, by Hydroxymethylated DNA Immunoprecipitation (hMeDIP) followed by Next Generation Sequencing or quantitative Polymerase Chain Reaction (PCR). We also measured the expression of hydroxymethylated genes using quantitative reverse transcription PCR. **Results:** Genome wide analysis revealed hundreds of hyper- and hypo-hydroxymethylated loci in both promoters and gene bodies of TRAMP tumors, as compared to normal prostates. We validated the 5hmC status of a subset of these genes and examined their expression, which revealed a pattern whereby promoter hydroxymethylation correlates with transcriptional silencing and gene body hydroxymethylation correlates with increased expression. **Implications:** Our data show that 5hmC patterns are indeed disrupted in prostate cancer resulting in altered gene expression, which differs depending on whether the 5hmC is in a gene's promoter or transcribed region. These findings support our hypothesis that 5hmC, in a manner similar to 5mC, may play on a role in prostate cancer progression.

Carboxylesterase 1 Genetic Variation Impaired Sacubitril Activation. Jian Shi, *University of Michigan*, Xinwen Wang, *University of Michigan*, Jenny Nguyen, *University of Michigan*, Audrey H. Wu, *University of Michigan*, Barry E. Bleske, *University of New Mexico*, Hao-Jie Zhu, *University of Michigan*. **Objectives:** Sacubitril, a pro-drug recently approved by the FDA for use in combination with valsartan for the treatment of heart failure, must be metabolized (hydrolyzed) to its active metabolite LBQ657 in order to exert its intended therapeutic effects. This study was to identify the enzyme (s) responsible for the activation of sacubitril, and determine the impact of genetic variation on sacubitril activation. **Methods:** We conducted an incubation study of sacubitril with human plasma, recombinant human carboxylesterase 1 (CES1), carboxylesterase 2 (CES2), and the S9 fractions of human liver, intestine, kidney, and cells expressing wild type CES1 and the CES1 variant G143E (rs71647871). In addition, we genotyped 53 human liver samples for the G143E variant, and measured sacubitril activation after incubation with the S9 fractions of these liver samples. **Results:** Sacubitril was found to be activated by recombinant CES1 and the S9 fractions prepared from human liver and wild type CES1 cells, but not other S9 fractions or recombinant CES2, suggesting that sacubitril is a selective CES1 substrate. The incubation study of cell lines transfected with the CES1 variant G143E demonstrated that G143E is a loss-of-function variant for sacubitril activation. Importantly, sacubitril activation was significantly impaired in human livers carrying the G143E variant.

Implications: Sacubitril is selectively activated by CES1 in human liver. The CES1 genetic variant G143E can significantly impair sacubitril activation. Therefore, CES1 genetic variants appear to be an important contributing factor to interindividual variability in sacubitril activation, and have the potential to serve as biomarkers to optimize sacubitril pharmacotherapy.

Reprogramming Factor Oct4 is Crucial for Transdifferentiation of Hepatocytes to Biliary Epithelial Cells. Vishakha Bhawe, *Philadelphia College of Osteopathic Medicine*. **Objective:** Transdifferentiation of hepatocytes or biliary epithelial cells (BECs) into each other provides a rescue mechanism in liver disease under situations where either cell compartment fails to regenerate by itself. The mechanisms underlying such transdifferentiation of terminally differentiated epithelial cells are not fully elucidated. Recent research indicates that expression of reprogramming factors Oct4, Nanog, and KLF4 in adult rat liver is important for hepatocyte proliferation and liver regeneration. This study examines the role of Oct4 in transdifferentiation of hepatocytes to BECs. **Methods:** We used the hepatocyte organoid culture: an *in vitro* hepatocyte to biliary transdifferentiation model. In this model, primary hepatocytes when plated on collagen coated roller bottles and cultured in presence of HGF, EGF, and dexamethasone, transdifferentiate to form BECs between 6-15 days in culture. **Results:** Oct4 is upregulated at day 6 as assessed by mRNA and protein levels, suggesting possible involvement in transdifferentiation. Blocking Oct4 expression in hepatocytes using adenovirus containing Oct4 shRNA significantly decreased the number of BECs as compared to controls as assessed by biliary marker HNF1-beta, strongly supporting the role of Oct4 in transdifferentiation of hepatocyte to BECs. Moreover, Oct4 inhibited cells show significantly less SOX9, YAP, and Notch (also shown to be involved in transdifferentiation) expression as compared to controls. Investigation of mechanisms through which Oct4 might regulate transdifferentiation is under way. **Implications:** Findings from this project might potentially lead to novel therapies that promote hepatocyte to biliary transdifferentiation in chronic biliary diseases and potentially delay the requirement for a liver transplant.

CHEMISTRY

Discovery of Novel Anti-*Mycobacterium tuberculosis* FadD32 Inhibitors. E. Jeffrey North, *Creighton University*. **Objectives:** *Mycobacterium tuberculosis* (*M. tb*) is the causative pathogen responsible for tuberculosis (TB) and remains a global disease that affects many people. According to the World Health Organization (WHO), TB ranks alongside HIV as a leading cause of death globally, with 1.5 million deaths in 2014 alone. With the emergence of multidrug-resistant (MDR) and extensively drug-resistant (XDR) TB strains, the development of new anti-TB antibiotics is strongly needed. FadD32 is an essential ligase required for the synthesis of mycolic acids, a major lipid component of the mycobacterial cell wall, and is the biological target for this project. Towards these efforts, the design and synthesis of putative FadD32 inhibitors were developed as novel anti-TB agents. **Methods:** The design of novel potential FadD32 inhibitors was accomplished using computational scaffold hopping methodologies with subsequent flexible alignment studies to ensure novel scaffolds maintained the required pharmacophore. *In silico* ADME assessments were used in prioritizing lead compounds with optimal pharmacokinetic properties. Synthetic schemes for these compounds were designed and used to synthesize compounds. **Results:** Discovery and synthetic prioritization of novel anti-TB compounds was fueled using a robust computational assessment using ligand-based drug design, flexible alignment studies and theoretical ADME-Tox profiles. Production of synthetically tractable compounds, their anti-tubercular activity and *in*

in vitro pharmacokinetic profiles will be presented. **Implications:** The discovered anti-TB compounds have broadened the scope of known anti-TB agents, and have the potential to shorten current TB drug regimen and be active against drug-resistant strains by targeting a novel essential ligase.

Evaluation of the Biological Activity of *Cajanus cajan* Flavonoids and Related Analogs. Denise S. Simpson, *Cedarville University*, Rachel M. Wilcox, *Cedarville University*, Rebecca J. Gryka, *Cedarville University*, Samson Amos, *Cedarville University*. **Objectives:** Human glioblastomas (GBMs) are aggressive brain tumors which are frequently resistant to radiotherapy, chemotherapy and surgery. There is need for better therapies for GBM and a deeper understanding of the mechanisms underlying apoptosis in glioma cells. The goal of this study was to determine the activity of the isoflavones genistein, cajanin, prunetin, and biochanin A against three GBM cell lines and normal human astrocytes (NHAs). Additionally, the antioxidant activity of these compounds was investigated. **Methods:** The effect of the isoflavones on cell growth and proliferation was determined by employing the MTT assay. Western blot analyses were performed to determine the protein and gene expression levels in the treated cells. Flow cytometry was used to determine the effects of the isoflavones on the cell cycle. A modified reducing power assay was used to assess the antioxidant activity of the compounds. **Results:** Genistein, biochanin A and cajanin displayed dose-dependent cytotoxicity toward GBM cells but not NHAs. Biochanin A and cajanin were found to modulate cell growth and survival by interfering with regulators of apoptosis including Akt, ERK1/2, mTOR, and p70S6K. Biochanin A and cajanin dose-dependently cleaved caspase-3 and PARP resulting in increased apoptosis of the GBM cells. Both compounds were found to disrupt cell cycle progression. No direct correlation was seen between the antioxidant power of the tested isoflavones and their cytotoxicity towards GBM cells. **Implications:** Taken together, the data obtained provide a strong rationale for further investigating the *in vivo* effects of the isoflavones on the biological pathways in gliomas.

Rational Design of Thiopeptide Antibiotics through Biosynthetic Pathway Engineering. Madan K. Kharel, *University of Maryland Eastern Shore*, Alex Walk, *University of Maryland Eastern Shore*, Ha Phu, *University of Maryland Eastern Shore*, Katherine Ma, *University of Maryland Eastern Shore*, Damaris Ndam, *University of Maryland Eastern Shore*. **Objectives:** The aim of this study is to generate analogues of thiocillins with improved hydrophilicity. **Method:** We have utilized the biosynthetic gene cluster of thiocillin producer *Bacillus cereus* to design gene inactivation cassettes. Targeted gene inactivation (via in-frame deletion of select genes) approach was utilized to generate mutant strains which are capable of producing thiocillin analogues with C-terminal carboxylic acid functional group. Amberlite XAD-16 resin was used to extract crude metabolites from culture broth of *Bacillus cereus*. HPLC and HPLC-MS were utilized to analyze the metabolites produced by the native and the mutant strains. **Results:** There are four copies of structural peptide biosynthetic genes (*tcIE-H*) in the thiocillin gene cluster. We have generated two sets of plasmid constructs: one with the deletion of all copies of structural peptide coding genes and the other with the deletion of all but one (*tcIE*). As expected, the mutant strain that lack all structural peptide biosynthetic genes was unable to produce any thiocillin. We expect a normal production of thiocillin by the second strain. We are currently conducting mutational experiments to delete terminal codons on *tcE* gene. The mutant strains will potentially produce more hydrophilic thiocillin analogues with C-terminal carboxylic acids. The synthetic modifications of these metabolites will generate a small

library of thiocillins for SAR study. **Implications:** These results provide a framework for generation of a small library of thiocillins with improved hydrophilicity. SAR study may shed more lights toward clinical development of such thiocillin analogues.

CONTINUING PROFESSIONAL EDUCATION

Is CPD More Effective than a Traditional CE Model in Improving Practice Behavior? Megan Murphy-Menezes, *University of Florida*. **Objectives:** CPE is intended to provide professionals with a structured means to maintain competence. Recently, ACPE endorsed a revised definition of CE calling for the incorporation of CPD into the traditional model of CE. Evidence indicates that pharmacists who complete CPD have greater perceptions of improved practice. However, there is no data to demonstrate that CPD leads to an improvement in practice behavior or clinical knowledge. The objective of this study was to determine if a CPD model is more effective than a CE model in changing practice behavior and increasing knowledge retention. **Methods:** Participants were randomized to a traditional CE or a CPD model. Four hours of CPE content related to women's health was available to the traditional CE group. The CPD group had access to the same content but were required to complete a CPD portfolio, making seven hours of CPE credit available. Changes in practice behavior was measured using the behavioral pharmaceutical care scale (BCPS) before and after the CE/CPD exercise. Pre and post knowledge change was also measured using multiple choice questions. Data was analyzed using a mixed effect regression analysis. **Results:** 203 pharmacists registered for the study; 80% reported no post-graduate training; 31% reported board certification; half were community practitioners; and 65% were in practice >10 years. **Implications:** As of April 1, data was still being collected. If CPD is found to be more effective than CE in changing practice behavior, pharmacy stakeholders may advocate for formal incorporation of CPD into lifelong learning.

EXPERIENTIAL EDUCATION

Early Clinical Immersion as Inpatient Psychiatry Medication Education Group Leaders. Jacqueline E. McLaughlin, *UNC Eshelman School of Pharmacy*, Lindsey Kennedy, *UNC Hospitals*, Shauna Garris, *UNC Hospitals*, Suzanne Harris, *UNC Eshelman School of Pharmacy*, Nicole R. Pinelli, *UNC Eshelman School of Pharmacy*, Ashley Hillman, *UNC Hospitals*, Denise H. Rhoney, *UNC Eshelman School of Pharmacy*. **Objectives:** The Psychiatry Medication Education Team was designed to provide second- and third-year student pharmacists with experience in an academic medical center. This study examined the impact of designing and leading inpatient psychiatry medication education groups on student pharmacists' development. **Methods:** In 2015, 27 students volunteered and completed training. All students completed a pre-survey about prior experience, self-efficacy, and perceptions of patients with mental illness using the Opening Minds Scale for Health Care Providers (OMS) and Social Distance Scale (SDS). Program participants were asked to complete a post-survey (analyzed with the pre-survey using Wilcoxon Signed Ranks Test) and provide reflection statements about their experience (analyzed using thematic coding). **Results:** Thirteen students observed and/or led one or more medication education groups and completed the post-survey. Following participation, students reported higher self-efficacy for various tasks, including: describing the purpose of a medication education group to a patient with mental illness ($p=.020$); facilitating a psychiatry medication education group ($p=.027$); identifying potential medication-related problems in patients with mental illness ($p=.016$); and using empathy in interactions with a patient with mental illness ($p=.023$). Scale reliabilities (Cronbach's alpha) were high. Primary

themes from reflection statements included: observations about patient behavior in the groups; improved understanding of mental illness; and new strategies for engaging in direct patient care. **Implications:** Participating in the design and implementation of psychiatry medication education groups can improve student self-efficacy and promote the development of patient care strategies in second- and third-year student pharmacists.

LIBRARY AND INFORMATION SCIENCE

The Possible Harms of Statins: What do Product Labels and Pharmacy Leaflets Tell Us? Peter Doshi, *University of Maryland*, Jan Sieluk, *University of Maryland*, Anna Hung, *University of Maryland*. **Objectives:** Healthcare professionals and consumers expect clear information regarding drug-related harms from full prescribing information (PI), patient package inserts (PPIs), and pharmacy leaflets, but little is known about how consistently these sources communicate drug risks. This study evaluates the degree to which healthcare professionals and consumers receive consistent messages regarding the possible harms of statins. **Methods:** We extracted all passages describing seven adverse events (diarrhea, arthralgia, dyspepsia, confusion, memory loss, rhabdomyolysis, and kidney failure) from PIs, PPIs, and pharmacy leaflets for eight statins. For each type of information source and adverse event (drug-harm pair), two reviewers independently judged extracted passages as indicating either a confirmed, unconfirmed, or mixed relationship between statin and adverse event. We resolved disagreements through consensus and calculated descriptive statistics of consistency between information sources. **Results:** PI and PPI consistently conveyed the relationship between a given statin and given adverse event (either both “confirmed” or both “unconfirmed”) in 12 of 17 evaluable drug-harm pairs. PPIs and pharmacy leaflets were consistent in 10 of 10 evaluable drug-harm pairs. PIs indicated a confirmed, causal relationship in 15 drug-harm pairs that were not mentioned in pharmacy leaflets. Likewise, PPIs indicated a confirmed, causal relationship in 7 drug-harm pairs that were not mentioned in pharmacy leaflets. Before reaching consensus, two reviewers classified 28% (37/133) of evaluable drug-harm pairs differently. **Implications:** Despite the widespread use of statins, we discovered considerable ambiguity in language used to describe their possible harms and mixed consistency between PIs, PPIs, and pharmacy leaflets.

PHARMACEUTICS

Combination of Sulforaphane and Paclitaxel to Treat Triple Negative Breast Cancer. Gi Lim, *Husson University*, Yanyan Li, *Husson University*, Rebekah Lim, *Husson University*, Shuhua Bai, *Husson University*, Tao Zhang, *Husson University*. **Objectives:** Triple negative breast cancer (TNBC) is a breast cancer subtype with high morbidity, mortality and relapse rates. The objective of the project was to combine sulforaphane (SFN) and paclitaxel (PAC) to effectively kill both differentiated cancer cells (the bulk population) and cancer stem cells (CSCs, the small population) in TNBC. **Method:** MTS assays were used to evaluate cytotoxicity of SFN and PAC in three TNBC cell lines. Aldefluor assays and mammosphere assays were utilized to determine the effects on CSC population and self-renewal capacity. Western blotting and lentiviral β -catenin reporter assays were to examine the regulation of critical signaling pathways by SFN and PAC. Mammary epithelial cell (MEC)-derived exosomes were used to enhance delivery of SFN and PAC. **Results:** The MTS results showed that IC₅₀ values of SFN and PAC ranged from 5-20 μ M and 5-15 nM, respectively. Co-treatment with SFN (5 μ M) decreased the IC₅₀ values of PAC to 2-8 nM. SFN (2.5 and 5 μ M) reduced the aldehyde

dehydrogenase-positive (ALDH+) cell population by ~ 50%, while PAC (5 and 10 nM) raised ALDH+ population by ~ 2-fold. SFN (2.5 and 5 μ M) significantly reversed PAC-induced ALDH+ increase. Combination of SFN and PAC inhibited mammosphere formation. SFN but not PAC down-regulated Wnt/ β -catenin signaling. MEC-derived exosomes further enhanced the potency of PAC but not SFN. **Implications:** These results support the combination of SFN with PAC to enhance anticancer efficacy against TNBC. This work provides strong rationale for further studies of combining SFN with chemotherapy to improve cancer treatment outcome.

Targeting PDE2 to Treat Memory Loss Associated with Alzheimer’s Disease. Ying Xu, *University at Buffalo, The State University of New York*, James O’Donnell, *University at Buffalo, The State University of New York*. **Objectives:** Cognitive deficits are the characteristic symptoms of neurodegenerative diseases such as Alzheimer’s disease (AD). The accumulation of A β , particularly A β 1-42 (A β 42), and its deposition in insoluble plaques are the major neuropathological hallmarks of AD. PDE2 is one of the 11 PDE families (PDE1-11) catalyzing the hydrolysis of intracellular cAMP and cGMP, which is found in the hippocampus known to regulate memory processing. The objective of this study was to explore the efficacy of PDE2 inhibitors Bay 60-7550, ND 7001, and PDE2 knockdown on A β 42-induced learning and memory deficits by enhancing PDE2 dependent signaling. **Method:** Mice were microinfused with A β 42 (0.4 μ g/side) into bilateral CA1 subregions for 14 days. Then the cognitive behaviors and the related proteins expression were tested 14 days after treatment with PDE2 inhibitors Bay 60-7550 (1 and 3 mg/kg, i.p.) and ND7001 (1 and 3 mg/kg, i.p.), or microinfusion with lenti-PDE2A-miRNA (5×10^6 tu/ μ l to CA1 of hippocampus). **Results:** Bay 60-7550, ND7001 and lenti-PDE2A-miRNA reversed A β 42-induced cognitive deficits as evidenced by increased in discrimination ratio in the object recognition test, increased latency to the platform and decreased numbers of crossings in the Morris water maze task. A β 42-induced decreased Bcl-2, PKA, PKG, pCREB and BDNF levels, as well as the increased cytokines and Bax expression were reversed by PDE2 inhibition. **Implications:** The data suggest that inhibition of PDE2 would reverse A β -induced learning and memory deficits at least in part by its regulation of neuroinflammatory, apoptotic and neuroprotective processes, which are involved in cAMP/cGMP signaling.

PHARMACY PRACTICE

Nighttime Dosing of Amlodipine vs. Lisinopril in Non-Dipping African-Americans – an Interim Analysis. Dave L. Dixon, *Virginia Commonwealth University*, Evan M. Sisson, *Virginia Commonwealth University*, Eric Parod, *Virginia Commonwealth University*, Michael Kelly, *University of Colorado*. **Objectives:** Abnormal diurnal blood pressures (BP) are associated with increased cardiovascular risk. The “non-dipping” phenomenon is more common in African-Americans and may explain why these individuals are at higher cardiovascular risk than other groups. The objective was to compare the reduction of nighttime systolic BP (SBP) with administration of lisinopril versus amlodipine in non-dipping African-Americans. **Methods:** This prospective, randomized, parallel group study enrolled self-identified African-Americans being treated with ≥ 2 antihypertensives (including an ACE-I and amlodipine) who exhibited a non-dipping BP pattern, defined as <10% decrease in nighttime SBP compared to daytime SBP, using 24-hour Ambulatory BP Monitoring (ABPM). Patients were randomized in a 1:1 fashion to moving their lisinopril or amlodipine to nighttime. Follow-up visits occurred at week 4 to assess adherence, clinic BP, and routine laboratory monitoring and week 8 to repeat 24-hour ABPM. The primary outcome was the mean change

in nighttime SBP from baseline to study end for each group. **Results:** A total of 19 subjects have been enrolled to date. ABPM data was available for 13 subjects and 46% (n=6) were non-dippers. There was no difference in mean nighttime SBP for the lisinopril or the amlodipine group when compared to baseline. SBP measured in clinic decreased from 136 mmHg at baseline to 132 mmHg at study end. Only 1 subject converted to a normal diurnal BP pattern. **Implications:** These interim data suggests the nighttime dosing of either lisinopril or amlodipine may not improve mean nighttime SBP. A larger sample size is needed to confirm this hypothesis.

Risk Factors for Extended Spectrum β -lactamase (ESBL) Producing Enterobacteriaceae Urinary Tract Infections (UTI) in a Medically Underserved Population. Emi Minejima, *University of Southern California*, Annie Wong-Beringer, *University of Southern California*. **Objectives:** ESBL producing *E coli* or *Klebsiella* spp (EK) infections contribute to significant healthcare and economic burden. The objective was to evaluate the clinical epidemiology with a focus on risk factors for ESBL EK acquisition in a medically underserved population. **Methods:** This was a prospective observational study of hospitalized patients with UTI between 1/2015-2/2016. Adult patients with community-onset UTIs were included if they had symptoms of UTI, pyuria, and received ≥ 48 h of antibiotics. Patients were grouped by ESBL vs non-ESBL EK UTI and compared for risk factors and outcomes. **Results:** 213 patients were included; 37% were infected with ESBL EK. Overall 1/3 were male and majority (88%) resided at home prior to admission. ESBL group was older (mean 58.5y vs 52.8y, $p=0.02$) and had higher Charleston Comorbidity Index scores (median 4 vs 2, $p=0.0046$). More ESBL patients had indwelling catheters (18% vs 9%, $p=0.08$), prior urologic procedures (22% vs 11%, $p=0.046$), prior antibiotic exposure (63% vs 47%, $p=0.032$), and recurrent UTI (40% vs 24%, $p=0.02$). Although the proportion of patients with prior UTI (53% vs 44%, $p=0.26$) was similar, ESBL group had higher rate of history of ESBL UTI (39% vs 5%, $p<0.0001$). Days until clinical stability (median 2d, $p=0.63$), 30d readmission (15% vs 13%, $p=0.69$), and 30d recurrence (9% vs 6%, $p=0.42$) were similar, however LOS was 1d longer (median 5d vs 4d, $p=0.037$) in the ESBL group. **Implications:** Risk factors identified in this medically underserved population can be used to target empiric therapy and education to prevent recurrence.

SOCIAL AND ADMINISTRATIVE SCIENCES

Evaluating the Medium of Comics for Providing Information on Adult Immunizations. Jagannath M. Muzumdar, *St John's University*. **Objectives:** To compare effects of two vaccine information flyers – CDC vs. comic on adults: (a) attitude towards the flyer; (b) perceived informativeness of the flyer; (c) intention to seek more information about adult immunizations after viewing the flyer; (d) intention to get immunized after viewing the flyer. **Methods:** A between-group, randomized trial was used. Adults (age ≥ 18 years) at an ambulatory care center were randomly assigned either the CDC or comic flyer. They were asked to respond to survey items developed to measure the outcome variables. Items were measured using a 7-point semantic differential scale. Exploratory factor analysis and Cronbach's alpha was conducted. Independent-samples t-test was used for comparisons. **Results:** A total of 265 surveys (CDC: n=132 vs Comic: n=133) were analyzed. The comic flyer had a statistical significant effect on participant's attitude and perceived informativeness of the flyer compared to the CDC flyer. Flyer type did not have any statistical significant effect on intention-related variables. Significantly more participants reported there was a "very good-to-good" chance that they would pick and read the comic flyer (89.5%) compared to the CDC flyer (74.3%). Also,

more participants who viewed the comic flyer (68.5%) reported taking "short-to-very short" amount of time to read the flyer compared to the amount of time taken by participants who read CDC flyer (55.3%).

Implications: The study findings showed that the comic flyer was positively evaluated compared to the CDC flyer and could provide a new direction for developing educational materials about adult immunizations.

Pharmacist-Patient Communication about Addiction and Willingness to Counsel and Refer. Marc L. Fleming, *University of Houston*. **Objectives:** To elicit modal salient beliefs of community pharmacists regarding their willingness to engage patients (i.e., provide interventional counseling) with aberrant prescription opioid use as identified from reviewing prescription drug monitoring program data. **Methods:** Four focus groups (1-Austin; 3-Houston) were conducted among Texas community pharmacists using the theory of planned behavior as a theoretical framework. Open-ended questions were used to capture behavioral beliefs (advantages/disadvantages), normative beliefs (approving/disapproving individuals or groups) and control beliefs (facilitators/barriers) associated with pharmacists' engagement. Content analysis using ATLAS.ti software was conducted to identify modal salient beliefs elicited by at least 15% of the study sample. **Results:** A total of 31 community pharmacists participated. Fifteen behavioral beliefs, thirteen normative beliefs and eleven control beliefs were identified as modal salient beliefs. The most common behavioral belief was the disadvantage associated with patient confrontations (n=22). Pharmacists also believed that engaging patients may cause loss of customers/business (n=11) but may help patients receive appropriate counseling (n=11). Important individuals/groups that pharmacists identified as influential in their decision to engage patients were regulatory organizations (e.g., pharmacy boards and law enforcement) (n=22), family/friends of patients (n=20). Time required for counseling was found to be the most commonly cited control factor belief (n=31). **Implications:** The results illustrate some of the key challenges faced by community pharmacists when considering engaging patients with abuse/misuse of prescription opioids. Addressing barriers to engagement will be necessary to ensuring that more pharmacists are willing to provide interventional counseling and treatment referrals for patients to combat prescription drug abuse.

INNOVATIONS IN TEACHING AWARD – WINNERS

A Novel Use of Photovoice Methodology in a Leadership APPE and Pharmacy Leadership Elective. Jane E. Wilson, *University of Oklahoma*, Michael J. Smith, *University of Oklahoma*, Tammy L. Lambert, *University of Oklahoma*, David L. George, *University of Oklahoma*. **Objective:** Describe an innovative teaching approach in an APPE and leadership elective. **Method:** Three cohorts of students [(2014: n=14), (2015: n=17), (2016: n=19)] were introduced to photovoice (PV) method in their leadership APPE. Photovoice required students to take, present, and discuss photographs within their cohorts. Photovoice was used as an innovative teaching method with the intent the process would compel students to be involved in leadership development throughout experiential rotations, participate in discussions related to leadership development, and engage in creative activity. Group discussions from the class of 2014 were recorded and transcribed. Students from all cohorts were asked to participate in an electronic survey containing items based on PV learning objectives. All students were asked to participate in semi-structured interviews about PV. **Results:** The inductive coding method was used to identify themes from group discussion transcripts. Analysis of themes revealed

51.5% of the PV photographs related to emotional intelligence. Development of others and strong teams were themes represented in 44.3% of photographs. Survey data indicated all respondents agreed PV was a valuable and useful method to describe learning in leadership. Interview coding also revealed themes related to emotional intelligence and development of teams. **Implications:** PV projects could be used as an effective teaching method in a variety of pharmacy courses and experiential learning environments.

Implementation of a Novel Intersession Course during the P4 Year. Joseph J. Saseen, *University of Colorado*, Allison B. Blackmer, *University of Colorado*, Megan Thompson, *University of Colorado*, Jason Brunner, *University of Colorado*. **Objectives:** To assure student achievement of five programmatic outcomes during the P4 year, at a near terminal level of student training, through faculty assessments.

Methods: A required Intersession course was implemented as a culminating experience within our renewed curriculum. Students re-engaged on campus after completing five of seven Advanced Pharmacy Practice Experiences (APPEs). Five assessments were derived from pre-work assignments generated from individual real-world student experiences, including: clinical cases, drug information questions, clinical pearl presentations and reflection. Optional value added sessions were provided focused on therapeutic knowledge, board examination preparation and professional development. The Kirkpatrick's Four-Level Training Evaluation Model was used to assess this course.

Results: Overall, 145 of 149 (97%) students demonstrated achievement of outcomes, the remaining 4 were required to complete reassessment after completing the final two APPEs. Level 1 data (reaction) indicate 93% of students and 100% of faculty believed the course was valuable. Level 2 data (learning) revealed that >80% of students and 85% of faculty agreed/strongly agreed with statements regarding learning objectives. Level 3 data (behavior) showed a mean change in performance of 17.6-20.3% ($p=0.001$) on key course components based on faculty assessment/feedback. Preliminary level 4 data (results) indicate that Intersession complemented what students learned in other courses (mean 4.3; SD 0.77) and was designed in a manner to meet outcomes (mean 4.3, SD 0.59). **Conclusions:** This course was a significant innovation that successfully provided a near final assessment of key programmatic outcomes. Students also demonstrated an increased awareness of the need for lifelong learning.

INNOVATIONS IN TEACHING AWARD – HONORABLE MENTION

Creating an Open-Access, Interprofessional Multimedia Healthcare Journal Driven by Students at Butler University COPHS: *BU Well*. Erin Albert, *Butler University*, Mary Graham, *Butler University*, Annette McFarland, *Butler University*, David Reeves, *Butler University*, Jessica Wilhoite, *Butler University*, Deborah Zeitlin, *Butler University*, Sarah Norman, *Butler University*, Grace Conroy, *Butler University*. To address the newer demands of ACPE 2016 – Standards 4, 3, 9.1, 12.3, professional communication (appendix 1) and interprofessional interaction (appendix 2), along with the 4 Core Competencies for Interprofessional Collaborative Practice (particularly competency domains 3 (interprofessional communication) & 4 (teams and teamwork)), and meeting Butler University's mission of "... provid[ing] the highest quality of liberal and professional education and to integrate the liberal arts with professional education..." we created a new co-curricular opportunity for our best writers at Butler University. *BU Well* is an open-access multimedia student-driven healthcare journal that was founded by the Butler University COPHS in 2014. We first identified the top pharmacy student writers in

COPHS via PCAT writing scores in the P1-P3 classes, and then invited students to learn more about this co-curricular opportunity in fall 2014. Over 30 students signed up to participate in a 1-credit hour independent study course in spring 2015 to develop policies and procedures for the journal. Moving forward, a group of ~30 students each academic year will participate in a 1-credit hour course in the fall/spring semesters to write articles for publication consideration, review external articles for consideration, and publish one volume of *BU Well*. A variety of majors including pharmacy, physician assistant, business, liberal arts and sciences, and communication majors participated in this innovative program. Students have gained leadership skills in creating something new, and students will gain writing and editing skills throughout this 4-course sequence, which marries liberal arts education/professional education across colleges around healthcare and wellness.

Creative Thinking, Innovation, and TED Talks: An Elective Course. Jeff Cain, *University of Kentucky*. **Objective:** The objective of this elective course was to enhance student creative thinking and presentation skills with a focus on healthcare innovation. **Method:** A 2-credit elective course was developed and offered to pharmacy students in their third professional year. Instructional strategies within the course included activities to develop a creative mindset, exercises to develop divergent and creative thinking, article discussions pertaining to creativity and innovation, TED Talk analyses, and presentation design and delivery exercises. **Results:** Assessment instruments included pre- and post-course Torrance Tests for Creative Thinking (TTCT), a scoring rubric to evaluate a final mock TED Talk presented to faculty and students, and student course evaluations. Assessments pertaining to course objectives revealed a significant increase in TTCT verbal creativity scores over the course of the semester ($p < 0.05$) and confirmed that students could develop and present an original "idea worth sharing" using the TED format. Results from student course evaluations indicated high satisfaction with the course, the course format, and the learning outcomes. **Implications:** Creative thinking and innovation are becoming increasingly important for professionals in all fields. This is one of only two identified courses in health professions education that focuses on developing divergent and creative thinking skills. The innovative course design and instructional strategies were successful in increasing student creative thinking and ability to develop and present a novel solution idea to a healthcare-related issue.

Educating Pharmacists in Quality (EPIQ). Terri L. Warholak, *The University of Arizona*, Melissa Nelson, *The University of Arizona*, Patrick Campbell, *The University of Arizona*, Ana L. Hincapie, *University of Cincinnati*, Vibhuti Arya, *St. John's University*, David Holdford, *Virginia Commonwealth University*, Sam Stolpe, *Pharmacy Quality Alliance*, Maria Scarlotos, *Pharmacy Quality Alliance*, Hannah Fish, *Pharmacy Quality Alliance*, Donna West-Strum, *The University of Mississippi*. A team of faculty with expertise in pharmacy Quality Improvement collaborated with the Pharmacy Quality Alliance (PQA) to create the Educating Pharmacists In Quality (EPIQ) program. EPIQ was developed as a free quality improvement education resource for use by pharmacy faculty and other professionals to teach students, pharmacists, and other stakeholders about measuring, reporting, and improving quality in pharmacy practice in the United States. EPIQ contains five modules with 25 sessions that may be accessed online via the PQA website. Each session contains a PowerPoint lecture with corresponding audio recording, required readings, interactive activities, an instructor guide, sample quality improvement projects, and assessment questions. The tool is configured so it is

adaptable for use as either a part of or an entire course, a component of experiential education, as pharmacist CE, or as guidance for a quality improvement project in a pharmacy. EPIQ has been accessed over 480 times with more than 67,700 expected viewers and is integrated into more than 20 Doctor of Pharmacy curricula. Through survey research, students and faculty members have indicated that the program has had a positive impact on awareness and knowledge of pharmacy quality improvement.

Validating an Assessment-for-Learning Approach to Teaching PharmD Professionalism and Ethics: a Mixed-Methods Evaluation.

Michael J. Peeters, *University of Toledo*. **Objective:** The objective in this portfolio is to describe an innovative method for teaching, learning and assessment of students' *professional development* (i.e., ACPE's PharmD Standard 4.4) that used an *assessment-for-learning* approach. **Methods:** In place of a conventional assessment-of-learning, this investigation involves teaching, learning and assessment with an *assessment-for-learning* approach of professional development. Its evaluation used mixed-methods research design, with triangulation of qualitative and confirmative quantitative data, to assess professional development. Qualitative data came from an electronic developmental portfolio of professionalism & ethics, completed by PharmD students during their didactic studies. Quantitative confirmation came from the Defining Issues Test (DIT)—an assessment of pharmacists' professional development. **Results:** Over three years of PharmD study, each student wrote 22 reflections that were placed into their developmental portfolio. Students re-visited and reviewed prior reflections during some subsequent reflective writings. As qualitative evidence of learning, all students' final reflective writing (#22) on their professional development described *their* growth through this course series. Quantitatively, students took the DIT twice in 3 years. The 2015 PharmD class's DIT scores illustrated positive development overall; the lower 50% had a *large* initial improvement compared to the upper 50%. Subsequently, the 2016 PharmD class had greater positive results; they confirmed initial improvements from the prior class, but also showed stronger, practical development during the remainder of this longitudinal series. **Conclusions:** Triangulation of qualitative and quantitative assessments confirmed that University of Toledo PharmD students developed professionally during this course series with a formative *assessment-for-learning* approach to teaching, learning and assessment.

EXCELLENCE IN ASSESSMENT AWARD WINNERS

Assessing and Improving Faculty Peer Observations. Kate Aument, *University of Illinois at Chicago*, Rosalyn P. Vellurattil, *University of Illinois at Chicago*. **Objectives:** To design a systematic process for evaluating and improving faculty peer observations of teaching. **Method:** A formative evaluation method based on Scriven's evaluation checklist and Chyung's step-by-step evaluation process was conducted in two phases: evaluation proposal and evaluation implementation. During the evaluation proposal, stakeholder input helped with creating a logic model and identifying the overall evaluation question, "How may the faculty peer observation of teaching be improved to better meet its goals?" Data collection included quantitative and qualitative methods. Outcomes were compared against rubrics that led to an overall quality rating per evaluated dimension (e.g., specific aspect of the intervention or object being evaluated). **Results:** Eight stakeholders, eight faculty peer observers, and 27 faculty instructors participated. All five evaluation dimensions were rated as "some improvement needed" with four dimensions weighted as "extremely important." Recommendations for improvement

included reviewing the archival process of faculty peer observation forms, updating the faculty peer observation form, and improving communication to stakeholders. **Implications:** Quality improvement recommendations were prioritized by dimension weighting and ease of implementation. As colleges of pharmacy undergo curricular revision and space renovation to promote teambased learning and blended learning concepts, assessing curricular assessments is vital to ensuring teaching effectiveness. Colleges can use this systematic evaluation process to assess and make formative improvements within their own initiatives.

Evaluation of a Systematic Curriculum Review (SCR) Process and Impact on the Pharmacy Curriculum.

Danielle M. Miller, *North-eastern University*, Jennifer Kirwin, *Northeastern University*, Margarita V. DiVall, *Northeastern University*. **Objectives:** We aimed to evaluate our current SCR process and its impact on the curriculum. **Method:** The SCR process was developed and implemented in 2009 with the goal of continuous curriculum assessment and improvement. Information on impact and feedback on the SCR processes were collected from curriculum committee (CC) experience and an anonymous web-based survey sent to instructors of record for required and elective PharmD courses offered by the school of pharmacy and to current and past CC members. Relevant questions from the AACP surveys were also reviewed. **Results:** Overall, 32 (97%) participants completed the survey with 72% of those reporting course changes as a result of SCR. The most commonly reported course changes were changes to programmatic outcomes covered by the course (77%), assessment strategies/grade distribution (46%), course outcomes (38%), and changes to course content (38%). Based on feedback received, the following revisions to the SCR processes were made: change in frequency of course review (from every 3 to 4 years), inclusion of experiential and elective courses (supported by 63% of faculty), and streamlining the logistics of course review and presentation to the CC. AACP survey data revealed considerable improvements on questions related to curriculum development and improvement over the past 5 years. **Implications:** The development of the SCR process resulted in course improvements, kept curricular mapping current and was valuable in the most recent preparation of the self-study. The process can be easily transferrable to other institutions.

PIE-RECAP: A Reflective Journal Writing Model and Rubric to Maximize Meta-Cognition and Enable Action-Oriented Planning.

David Fuentes, *Pacific University Oregon*, Jeremy Hughes, *Pacific University Oregon*, Anita J. Cleven, *Pacific University Oregon*, Jackson Ross, *Pacific University Oregon*, Fawzy A. Elbarbry, *Pacific University Oregon*, Ian C. Doyle, *Pacific University Oregon*, Kelli Cadelinia, *Pacific University Oregon*, Mark A. Della Paolera, *Pacific University Oregon*, Brendan Stamper, *Pacific University Oregon*.

Objectives: To create a sustainable and structured model for reflective journal writing that will 1) promote development of deep connections between students and our program's staff, faculty, and administration, 2) enable students to create action plans after reflecting on their curricular (didactic/experiential), co-curricular, and personal activities, and 3) describe unique student experiences. Herein, we describe PIE-RECAP, outline the supporting educational psychology literature and resources, and share the process for development and refinement of the rubric. **Method:** The PIE-RECAP model was developed by reviewing several resources in educational psychology in combination with quality improvement models, resulting in a structured 8-domain format challenging students to engage in prioritization, identification, exploration, recollection, evaluation, challenging/solidifying own knowledge, and creation of an action plan for personal development. An

assessment rubric was developed and to date has passed through two norming sessions, resulting in a more robust process to assess student reflections. **Results:** PIE-RECAP was shared extensively with internal and external stakeholders, presented nationally, and awarded internal School-level and University-level grants for inclusion as a featured component of our student portfolio system. The rubric was designed to parallel the student reflection model. **Implications:** PIE-RECAP and the associated rubric may be adopted to meet CAPE2013 domains and ACPE 2016 Standards. Meta-cognition and development of actionable plans are easily documented in this process. The rubric was evaluated through norming sessions to refine the tool so diverse graders with minimal training could effectively use it. Other programs may adopt this within their curricula to enhance their reflective writing practices.

SCHOOL POSTERS

A Holistic Admission Process Leading to Successful Selection of Pharmacy Students in an Accelerated Program. Nancy DeGuire, *University of the Pacific*, Veronica T. Bandy, *University of the Pacific*, Veronica Semler, *University of the Pacific*. The Thomas J. Long School of Pharmacy and Health Sciences at University of the Pacific uses a holistic review process to ensure that pharmacy student candidates of the highest quality are considered for admission, progression and completion of an accelerated PharmD program. Upon completing the PharmCas and Pacific supplemental applications, a variety of rubrics are used to assess applicant credentials and proficiency in pre-pharmacy science and math, as well as upper-division science coursework, to ensure the strength of applicant's undergraduate academic preparation. Overall curriculum strength, institutions attended, grade trends, course loads and prior degrees are reviewed. Additional criteria considered include suitability for and knowledge of the profession, life experiences and obstacles faced, community service and leadership experience, and communication ability. Formal in-person interviews are done one-on-one with pre-trained faculty and current pharmacy students assessing behaviors, analytical skills, motivation, confidence, and adaptability. Professionalism and ethical frameworks are also investigated using standard behavioral questions. An additional assessment of timed written essay responses to pre-selected questions compliments the interview data gathered. Essays are reviewed for appropriateness, thoughtfulness, and grammatical correctness. Student pharmacists are used throughout the entire process and their input and scoring is highly valued and considered. Each candidate is scored and rated on each question and essay category and ranked for consideration by the Admission Committee with the Director of Admissions' input. A composite score is assigned to each candidate and applicants are evaluated using these comparative data.

A Longitudinal Approach to Training Pharmacy Residents in the Practice of Teaching and Learning. Erica Hoot, *Wilkes University*, Daniel S. Longyhore, *Wilkes University*. **Objective:** To describe a hybrid teaching and learning program (TLP) that provides pharmacy residents the instruction, mentorship, and practice opportunities to meaningfully contribute to the training of pharmacy students in the classroom and experiential setting. **Program Description:** This TLP is a yearlong course separated into two distinct sections. In part one the residents learn how to design effective classroom learning experiences from conception to implementation via live meetings and online modules and discussions. Part two consists of several required teaching experiences as well as building on and developing strategies for managing experiential learning. Residents are required to instruct a small group service-learning course through the fall and spring semester, design and implement an Alternative Medicine & Nutrition course/class,

participate in at least one skills-based laboratory, and facilitate at least one rotation of advanced- or introductory pharmacy practice experience students. The program director served as the evaluator for all resident teaching experiences. In addition, residents were assigned to full-time faculty mentors who acted as a resource and support throughout the duration of the program. At the conclusion of the program residents are required to submit a teaching portfolio consisting of course materials, teaching evaluations, student feedback, reflections from their various teaching experiences, and a recommendation letter from their mentor. Throughout the program and process the resident instructors, students, and mentors will be surveyed to identify themes for program improvement.

A Multi-Faceted Strategy to Ensure a Quality Applicant Pool for the Future of the Pharmacy Profession. Michael A. Dietrich, *Midwestern University/Glendale*, Shawn Tennant, *Midwestern University/Glendale*, Mitchell R. Emerson, *Midwestern University/Glendale*. Midwestern University College of Pharmacy-Glendale (MWU-CPG) endeavors to ensure a high quality applicant pool through our Promotion of Pharmacy and Recruitment Plan. The Plan engages constituents in three areas: feeder college administration and corporate partners; pre-health sciences college students; and high school students and guidance counselors, while illuminating the innovative features of MWU-CPG (e.g. accelerated and integrated curriculum) and the profession. 1) Feeder college administration and corporate partners: establishment of articulation agreements with high quality institutions (Arizona State University, Grand Canyon University) combined with school-specific open houses has provided the opportunity to interact with potential applicants in a targeted fashion. A fruitful strategy has been directed open houses for corporate partners/preceptors who have identified current pharmacy technicians that have demonstrated the skills and attitudes required of the profession. 2) Pre-health sciences college students: the MWU-CPG Pre-Pharmacy Club Mentoring Program for students at Arizona-based undergraduate institutions, utilizes current pharmacy students to assist pre-professional students in understanding pharmacy and provides guidance in navigation of the application process. 3) High school students and guidance counselors: the MWU Health Careers Institute highlights unique aspects of pharmacy through hands on demonstrations. Traditional career fairs, high school presentations, and engagement with counselors at the Arizona and American School Counselor Association meetings seek to disseminate the benefits of a pharmacy career and engage underserved populations of high school students. Initial feedback concerning all components of this plan is positive. Tracking of applicants and matriculants is ongoing to identify those strategic methods most successful.

A Peer-Led Tutoring Program to Provide Academic Assistance to Students in the Didactic Curriculum. Angela O. Shogbon, *Mercer University*, T. Vivian Liao, *Mercer University*, Jennifer L. Knaack, *Mercer University*. **Objective:** To evaluate the academic performance of student pharmacists in a peer-led tutoring program designed to assist students in academic difficulty. **Methods:** The Rho Chi Honor Society at our College of Pharmacy provides peer-led tutoring to students as one-to-one individual sessions for students in academic difficulty (defined as a score less than 70% on an exam), and group peer-led help sessions available for any student to attend. Tutors are pharmacy student members of Rho Chi in their second to fourth professional year. Overall exam and course pass rates, and attrition rates were assessed over two academic years (2013–2015). Descriptive statistics were utilized for data analysis. **Results:** A total of 82 tutees in academic difficulty participated in the individual tutoring sessions in 16 first through third professional year (P1 - P3) courses. A passing score

(70% or greater) was achieved on 76(79%) exams for which students were tutored, and 72(88%) tutees achieved an overall passing grade in the course. A total of 451 students attended one or more group peer-led help sessions in 16 P1 to P3 courses. Of the attendees, 95.1% achieved a passing grade at the end of the course compared to 98.6% for those who did not attend these sessions. Attrition rates displayed a downward trend before and after implementation of the group peer-led help sessions in 2013. **Implications:** A peer-led tutoring program may improve the academic performance of students in academic difficulty and serve as an early intervention tool for all students regardless of academic performance.

A Postgraduate Education Preparation Program, Meeting the Challenge in a Competitive World. Sarah M. Lorentz, *University of California, San Diego*, David S. Adler, *University of California, San Diego*, Palmer W. Taylor, *University of California, San Diego*. The Skaggs School of Pharmacy and Pharmaceutical Sciences (SSPPS) at the University of California, San Diego recognized in 2012 that securing postgraduate pharmacy training became more challenging and competitive among well-qualified candidates. A gradual downward trend in the percentage of SSPPS applicants obtaining residencies/fellowships was observed from 2009 to 2011. By 2012, there was a 43% decrease in the percentage of students obtaining residency programs compared to 2009. Faculty responded by developing a focused postgraduate education preparation program and a website database. The goal was to provide a timely, comprehensive, and structured program for students to prepare for post-graduate career and professional development. Prior to this program, presentations for career planning were available but not widely promoted or coordinated. The new program provided an enhanced format which addressed students' future planning. Initially, the programming primarily focused on a series of presentations for the P-4 class, although over the years has added introductory presentations for underclassmen. The program is coordinated by a faculty advisor with P-4 class leaders. The program includes topics and activities related to residency/fellowship and career planning, the PhORCAS application process, fellowship programs, career tracks, curriculum vitae support, residency showcase panels and workshops, interviewing techniques, mock interviews, and preparing for the match and post-match process, and website resources. Since the program inception, the percentage of students entering residencies has returned to its highest levels. Student pharmacists have benefited from this structured program as they transition from their professional education to post-graduate training and professional opportunities.

A Rural Health Recruitment Pipeline on the Asheville Satellite Campus of UNC Eshelman School of Pharmacy. Stephanie N. Kiser, *University of North Carolina at Chapel Hill*, Pamela U. Joyner, *University of North Carolina at Chapel Hill*, Carla Y. White, *University of North Carolina at Chapel Hill*, Mollie A. Scott, *University of North Carolina at Chapel Hill*. **Objectives:** The purpose of this study was to compare the number of students enrolled at UNC Eshelman School of Pharmacy from rural versus urban communities, and to develop a targeted rural recruitment pipeline for the Rural Pharmacy Health Initiative on the Asheville satellite campus. **Methods:** The numbers of enrolled students from rural versus urban communities was compared utilizing 2012 – 2016 data for both campuses. This analysis excluded students with out-of-state residency. Rural definition was based upon NC Rural Center classification. Recruitment activities targeted at middle and high schoolers as well as college students from rural areas were assessed. **Results:** Student enrollment data demonstrated that 36% of students on the Asheville campus come

from rural communities compared to 17% of students on the Chapel Hill campus. Sixty-four percent of Asheville campus students are from suburban or urban areas, compared to 83% of students on the Chapel Hill campus. In 2015, the Asheville campus developed 8 recruitment activities in collaboration with strategic partners for rural, middle and high schoolers, reaching 500 students from Western NC. Ten recruitment activities targeting college students reached 49 students during that same period. **Implications:** The Asheville campus is successfully recruiting students from rural communities, which is a primary focus for this campus. Building a rural health recruitment pipeline requires significant relationship and partnership with middle schools, high schools and regional universities across Western NC. Impact of strategies to cultivate a rural pharmacy student pipeline will be evaluated over time for identification and dissemination of best practices.

A Summer Intensive Boot Camp: Building the Pharmacy Pipeline in Rural Appalachia. Susan M. Gardner, *University of Charleston*, Rebecca S. Linger, *University of Charleston*, Tabitha Katie Oliver, *University of Charleston*. The University of Charleston School of Pharmacy (UCSOP) is located in West Virginia where 43 of our 55 counties are considered medically underserved. In addition, UCSOP seeks to educate and expose undergraduate and high school students regarding importance of the profession of pharmacy as it relates to patient care. Recruitment initiatives emphasize the benefits a pharmacist can provide to a medically underserved area. Our ExRx (Experience Pharmacy) Boot Camp held over four days, June 22-25, 2015 as an intensive, on-campus, immersive experience provided the opportunity for 31 students (both high school and undergraduate) from seven states to explore the profession of pharmacy through a hands-on curriculum. Facilitators included 12 pharmacy students who served as interns or counselors and over 15 UCSOP faculty and staff. Survey feedback from participants indicated that ExRx Boot Camp gave them an understanding of a pharmacist's role in serving rural populations, the importance of a pharmacist in chronic disease state management, and the desire to serve rural populations as a pharmacist in their future career. Survey data indicated an increased desire by camp participants to pursue a pharmacy career and to work in medically underserved areas.

A Transformative Shift: Competency-Based Active Learning at Washington State University. Jennifer D. Robinson, *Washington State University*, Connie M. Remsberg, *Washington State University*, Brenda S. Bray, *Washington State University*, Angela S. Stewart, *Washington State University*, Damianne Brand-Eubanks, *Washington State University*, Christina Buchman, *Washington State University*, Megan Willson, *Washington State University*, Julie Akers, *Washington State University*, Jeannie Padowski, *Washington State University*, Sayed S. Daoud, *Washington State University*, Jeffrey A. Clark, *Washington State University*, Mary F. Paine, *Washington State University*, Brian J. Gates, *Washington State University*, Linda G. MacLean, *Washington State University*, Gary M. Pollack, *Washington State University*. Washington State University College of Pharmacy (WSU COP) has transformed its education of Doctor of Pharmacy students by creating and applying a novel curricular approach: Competency-Based Active Learning. Beginning in 2013, the WSU COP removed the use of letter grades (A, B, C, and F) and transitioned to a competency-based honors/satisfactory/fail (HSF) assessment approach. Two years later, the faculty transformed our didactic teaching model by taking a participatory, active learning approach in the classroom. Beginning with the class of 2019, active learning was conducted live by faculty on two separate campuses simultaneously. Information that was previously provided via traditional lecture is provided to students

for digestion prior to class, and our most critical pedagogical resource, contact time between professors and students, is dedicated to diverse active learning strategies. We adopted this approach because we believe it creates an environment that supports the cognitive development of our students by using class time for higher-level learning and promotes affective development by building teamwork, leadership, communication, and organization skills. A description of the implementation of our competency-based active learning model on our two separate campuses will be presented. Preliminary data indicate that implementation of an HSF assessment approach has reduced attrition in the first year of the curriculum over the past three years.

A Cohesive Approach to Student Professional Growth, Career Development and Mentoring. Rosalyn P. Vellurattil, *University of Illinois at Chicago*, Daniel L. DiCesare, *University of Illinois at Chicago*, Debra A. Fox, Jason A. Rebello, *University of Illinois at Chicago*, Clara U. Okorie-Awe, *University of Illinois at Chicago*, Thomas TenHoeve, *University of Illinois at Chicago*, Nicholas G. Popovich, *University of Illinois at Chicago*. Various strategies are used to approach student professional growth, career development and mentoring at the UIC College of Pharmacy (COP). A cohesive approach involves four offices at our COP: Professional Development (OPD), Student Affairs (OSA), Advancement (OA), and Diversity and Inclusion (ODI). The Associate Dean for Professional Development (ADPD) works alongside the Pharmacy Student Council (PSC) to impact programming within 15 student organizations. Working with the PSC, the ADPD effects programming to meet students' needs, coordinate activities and prevent program overlap. The OSA conducts several programs that aid in preparation of the student obtaining employment including CV reviews, peer advising mentoring, and mock interviews. The OA engages alumni to serve in a student mentoring program based upon alumni expertise in the student's practice area of interest. Finally, the ODI tracks student organization servant leadership initiatives. For the 2014-2015 academic year, 15 topics were conducted by the ADPD. Sixty-Six CV reviews were completed, 194 students partook in the peer advising program involving 32 student peer advisors, and 44 students completed mock interviews with 15 alum/faculty interviewers. Eighty six alumni served as mentors for 160 students. Student organizations conducted 206 events and provided 5485 hours of community engagement. For the Class of 2015, 49.5% of graduates entered community practice, 30.1% secured residency positions, and 5.3% entered hospital practice. The COP's cohesive approach to student professional growth, mentoring, career development and outcomes continues to evolve. Currently, surveys track job/postgraduate placement. The use of LinkedIn to complement this information will be explored.

Addressing Retention Challenges – One School's Experience with a Student Success Program. Patricia A. Marken, *University of Missouri-Kansas City*, Maqual R. Graham, *University of Missouri-Kansas City*, Karen L. Hardinger, *University of Missouri-Kansas City*, Shelly M. Janasz, *University of Missouri-Kansas City*, Leigh Ann Nelson, *University of Missouri-Kansas City*, Russell B. Melchert, *University of Missouri-Kansas City*. In 2010, UMKC began implementing strategies to address increased academic attrition that occurred after changes to our progression policy and admission formula. The concern was heightened after the ACPE On-Time Graduation Rate monitoring defined a maximum allowable academic attrition rate. Strategies included conversion to a 2:4 program, curricular reform, analysis of progression policies at other pharmacy schools, modifying admission and progression policies and converting an existing early warning program for academic problems into a more comprehensive Student

Success Program (SSP). SSP identifies students real-time who are "struggling academically", as defined by receipt of a grade below a "C" on a major test or assignment, or a cumulative grade below a C. The program identifies these at risk students across all courses, instead of within a single course as done by the course coordinator. The Associate Dean of Student Affairs initiates contact between the at risk student and their faculty advisor thereby allowing a comprehensive assessment of circumstances leading to performance problems and initiation of strategies to improve performance and prevent academic dismissal. SSP, in concert with the other programmatic changes listed above, has resulted in a significant reduction in academic dismissals. This poster will provide a detailed description of the SSP and additional benefits to the school and students including fostering closer relationships between students and their advisors, improved data to track student performance within a semester and across the program and the measurement of the level of academic struggle within specific courses in real time and over time.

Addressing the Mental Wellbeing of our Students at The Ohio State University College of Pharmacy. James W. McAuley, *The Ohio State University*, Amy Fabian, Kiersten Pasternak, Paige Sinclair. The Ohio State University (OSU) College of Pharmacy's PharmD program is an academically rigorous program. Included in the many challenges that our pharmacy students' face is their mental wellbeing. Data from a student-led survey of our pharmacy students in fall of 2014 showed some concerning results as it related to their mental wellbeing. Additionally, data from a fall 2014 wellness onboarding pilot project across the 7 OSU health science colleges showed elevated scores on a depression scale and an anxiety scale; the highest levels were in students beginning pharmacy and medical school. Data from the OSU Suicide Prevention Program's "RUOK? Buckeyes" anonymous screening survey of our approximate 500 pharmacy students showed that of the 37 students who responded, 25 were in the "Very High Risk" or "High Risk" categories. All of this data pointed to an unmet need; addressing the mental wellbeing of our pharmacy students. Over the course of the last 18 months, a group of students, faculty and staff have been focusing more attention on the mental wellbeing of our pharmacy students. Multiple efforts have been carried out. Events have included, REACH suicide prevention seminars, a formalized OSU survey called "RUOK? Buckeyes", a large group conversation in a required course addressing mental wellbeing, patient speakers discussing depression and a dialogue with a local psychiatrist. We now have a shared mental health counselor in our college 2 days a week and a recent reassessment of student mental wellbeing shows progress being made in this critical area of student retention.

Admissions Criteria: Predicting Success. Heather A. Nyman, *The University of Utah*, Madeline Marshall, *The University of Utah*, Shawna Webster, *The University of Utah*, Heidi Bates, *The University of Utah*, Ashley Malili, *The University of Utah*, Holly Gurgle, *The University of Utah*, Donald K. Blumenthal, *The University of Utah*, James N. Herron, *The University of Utah*, Philip J. Moos, *The University of Utah*. In constructing the Pharmacy Pipeline, a common concern of Admissions Committees is identifying which criteria are the most predictive of success of an applicant once they enter the PharmD program. Different interests are individually weighted by committee members in an inherently non-uniform manner. To moderate this non-uniformity, our process involves many steps: 1) a committee that represents multiple stakeholders including Pharmacy faculty, alumni pharmacists, and student representatives is assembled; 2) evaluation of each candidate by the committee members on three objective measures

(prerequisite GPA, overall GPA and PCAT score) and three subjective measures based on a standard rubric-guided evaluation of the candidate's personal statement, their extra-curricular activities (includes health care exposure), and overall quality of the candidate that is influenced by factors such as life circumstance and letters of reference; 3) an independent interview process comprised of non-committee interviewers representing the same stakeholders; and 4) an independent writing assessment conducted during the interview day. While the Admissions Committee considers all of these components to be important in our process and uses all to assign a numeric score to rank each candidate, our data indicate that some of these factors are clearly associated with success in our program while others require further analysis. From the PharmCas file, academic success in our program has been most closely correlated with the prerequisite GPA, but not necessarily overall GPA, whereas the interview process helps identify individuals that we do not think are currently suited or prepared for our program.

Advancing Diversity in the Pharmacy Pipeline through a Respectful Holistic Admissions Process. Oscar W. Garza, *University of Minnesota*, L'Aurelle A. Johnson, *University of Minnesota*, Olivia Buncher, *University of Minnesota*, Susan E. Marino, *University of Minnesota*, Michelle Johnson-Jennings, *University of Minnesota*, Raquel Rodriguez, *University of Minnesota*, Darren Hoff, *University of Minnesota*, Sara Lofstrom, *University of Minnesota*. **Background:** Diversity among students in pharmacy programs has remained low and unrepresentative of evolving patient population demographics. At the University of Minnesota, applications from and matriculation of underrepresented minorities in the college have historically remained around 13% and 6% respectively. In 2014, the college implemented a strategic initiative for cultivating an environment that would better attract and retain a diverse student population. **Objective:** To advance diversity and inclusivity in the pharmacy workforce through a respectful holistic admissions process. **Process:** The Intercultural Development Inventory (IDI) was administered to all college faculty and staff with results disseminated to college leadership and individual departments. Integration of IDI-related training was recommended throughout the college with priority given to increased training for individuals involved in admissions. Prior to the 2015-2016 admissions cycle, IDI debriefings were conducted on both campuses to staff and faculty serving on the Admissions Committee. Additionally, the committee received educational training aimed at identifying and resolving implicit biases during the admissions process. **Outcomes:** Increased awareness, knowledge, and skills development have become immediately evident. Committee members sought group opinion when biases arose and openly challenged members about statements made regarding applicants' experiences and background throughout the review process. Committee members have become increasingly mindful of the criteria they use for evaluating applicants and have become more apt to identifying problematic assumptions that may have otherwise influenced review decisions. **Implications:** Intentional approaches for reducing implicit bias during the admissions process will inevitably bolster strategic efforts for building diversity in the pharmacy workforce.

Advancing PharmD Professional and Career Readiness: Combining Didactic Coursework with Proactive Advising. Angela R. Austin Haney, *Oregon State University*, Lindsey BW Kinsella, *Oregon State University*, Lauren N. Corwin, *Oregon State University*, Gary E. DeLander, *Oregon State University*. Oregon State College of Pharmacy has experienced a nearly complete transition to students who are post-baccalaureate upon entry to the professional program.

This has led to increased depth and breadth of experiences, but has also identified a need to be intentional in guiding students' understanding of professional norms critical to maximizing success upon graduation. Responding to the 2013 CAPE outcomes, the Student Services Office renewed its focus on progressive development of personal and professional attributes required for readiness in advanced pharmacy practice experiences (APPE) and career success. The first professional year opens with a Career Perspectives and Professional Development course where students explore personal strengths and biases within the context of professional competency, ethics, team communication, and career options. This initial introduction to the profession is followed by a series of individual advising sessions, utilizing self-assessment tools created by the College and structured discussions with advisors. First-year advising sessions focus on ensuring students develop processes to set meaningful goals for academic and non-academic achievement. Second year advising sessions review, document, and define student progress toward fulfilling non-academic characteristics observed in successful graduates. Third-year sessions focus on student APPE and career readiness, revisiting personal goals, and supporting self-awareness required for continuing growth. These guided, individualized, progressive advising sessions support students in developing self-awareness of personal and professional strengths, and complement more traditional educational goals. Additionally, these activities establish a foundation for students' ongoing understanding of their personal responsibility for life-long learning and professional development.

An Assessment of Career Guidance Programming on Career Development. Sarah F. Bailey, *University of Wisconsin-Madison*, Karen Kopacek, *University of Wisconsin-Madison*, Rebecca J.K. Beebe, *University of Wisconsin-Madison*, Chelsea Wimmer, *University of Wisconsin-Madison*, Beth A. Martin, *University of Wisconsin-Madison*, Melgardt M. de Villiers, *University of Wisconsin-Madison*. Preparing pharmacy students for a competitive job and residency market requires providing them with meaningful career guidance. When measuring the success of career exploration and preparation programming, it can be challenging to assess specific information on students' career development plans. We designed a survey to assess the impact of our main career events, the annual Career Development Day and Career Fair. We examined how these two events impacted students' career preparation, strengthened networking abilities, and enhanced career development plans for each student cohort. Students were invited to participate in a voluntary, confidential follow-up survey (35% response rate). We measured changes in career preparation using a before-after self-rating item. For networking opportunities, students were asked to identify groups they interacted with at the Career Fair using a checklist of different participants (e.g., alumni, employers) and a before-after self-rating item on networking ability. Students indicated their future career development plans using a checklist of potential actions (e.g., meet with my adviser, revise CV) and responded to an open-ended question on their future plans. Students' self-ratings on career preparation and networking ability were significantly higher than before attending these events. Trends in the career preparation plans checklist and Career Fair networking checklist corresponded with students' year in the program. Many students' career development plans showed that they gleaned helpful information from the Career Development Day presentations. This approach to assessing career guidance programming measures improvements in students' career development plans, and provides useful information for improving career guidance programming.

An Exploratory Study of Students' Decision Making Process in Choosing a Pharmacy Program. Linda S. Garavalia, *Western University of Health Sciences*, Megan Nguyen, *Western University of Health Sciences*, Sunil Prabhu, *Western University of Health Sciences*, Marvin R. Ortiz, *Western University of Health Sciences*, Daniel C. Robinson, *Western University of Health Sciences*. **Objectives:** To explore WesternU pharmacy students' decision making process in choosing health care, pharmacy, and specific program(s). **Methods:** Narrative data were gathered through 6 focus group sessions (1-2 h duration each), ranging from 4 to 8 students from the first 3 years of the 4 year program (n = 35). A moderator asked a series of questions assessing factors that contributed to students' decisions to enter pharmacy and program choice. Qualitative thematic analysis and categorical coding were used to analyze data. **Results:** Reasons for pursuing a health professional degree ranged from a desire to help others to personal or family experiences with health problems to seeking job stability. Participants reported having volunteer or work experiences that exposed them to pharmacy. Parents had some influence but were most often supportive of participants' educational pursuits, regardless of specific field of study. Other programs were considered (medicine, dentistry, nursing, physician assistant, optometry), but participants chose pharmacy for a variety of reasons. A wide range of factors contributed to the program selection, including reputation or "brand" of the program, licensing exam pass rates of graduates, positive interview experience, "good vibe" of the campus and people, unique program emphases, and early pharmacy practice experiences. **Implications:** Participants' early exposure and interaction with pharmacists were some key factors attributed to students being attracted to the profession. Intangible aspects of programs, such as campus "vibe," may also be important factors in students' decision making process.

Apple Days: Growing the Pipeline through Community Engagement and Education. Susan L. Davis, *Wayne State University*, Dennis Parker, Jr., *Wayne State University*, Randall Commissaris, *Wayne State University*, Mary Katherine Clark, *Wayne State University*, Brian L. Crabtree, *Wayne State University*. **Introduction:** Eugene Applebaum College of Pharmacy and Health Sciences (EACPHS) at Wayne State University offers a program Apple Days that brings middle and high school students to campus for a series of activities and discussions. The primary goal of this program is to strengthen the pipeline of prospective students with an interest and aptitude in the sciences and improve their knowledge of pharmacy and other health careers. **Program Description:** The program is organized by the EACPHS Office of Student Affairs. Twice a year, five to seven groups of 15 students attend a half-day program of interactive sessions with students and faculty, hands-on activities, simulations, and discussions of student and professional life. After the event, participants complete a feedback survey to measure their impressions of the event, the pharmacy profession, and other health professions. Participants are also added to the college mailing list for follow-up regarding program recruitment. **Results:** Since 2007, 807 students have participated in Apple Days and completed participant surveys. These students represent 18 schools across metro Detroit. The majority of students (61%) were grade 11, 28% 10th, 7% 12th and 4% in 7th – 9th. 19% of students indicated pharmacy was one of the "most liked" professions they learned about, and 17% noted pharmacy as one of the most desirable. When asked which was most important in their future profession, 70% responded Happiness, 22% Money and 8% both. **Conclusion:** Apple Days is a unique program that promotes early engagement and awareness of pharmacy for potential future students.

Assessment of Student Personality Type and Impact on Academic Performance. Lena M. Maynor, *West Virginia University*, Jon P. Wietholter, *West Virginia University*. **Background:** Academic performance in health professions programs is influenced by many factors. Some data exists with regard to the impact of personality on academic performance in medical and undergraduate students. The purpose of this study is to evaluate if specific personality types are associated with measures of academic performance in a Doctor of Pharmacy program. **Methods:** All students providing informed consent from the class of 2019 were included. Participants completed an online personality assessment, which resulted in identification of a dominant personality type. Varying aspects of academic success through the first semester were evaluated including grade point average and academic standards penalties. Preliminary results have been analyzed to provide a baseline characteristic profile of the class of 2019. **Results:** A total of 67 students (88% of total class) participated in the study. Fourteen primary personality types were identified in the cohort. The two most common personality types were perfectionist (n=27) and creative (n=11). The median GPA ranged from 2.26 (result-oriented) to 4.0 (agent). Academic standards penalties occurred in six of the 14 groups (counselor, objective thinker, perfectionist, practitioner, promoter, and result-oriented). **Implications:** The potential implications of this study include providing guidance for early identification of students at risk for academic difficulty who may benefit from specific retention efforts and aiding the identification of students likely to succeed as part of the admissions process. Data collected over each semester of the program will allow for longitudinal tracking of students and may allow for targeted interventions.

Being Belmont: Preparing the Next Generation of Pharmacists. Ashton E. Beggs, *Belmont University*, Kelley Kiningham, *Belmont University*, Philip E. Johnston, *Belmont University*, Montgomery Williams, *Belmont University*, Kristy L. Wahaib, *Belmont University*. Belmont University College of Pharmacy (BUCOP) has implemented career mentoring strategies throughout the educational experience in core courses, electives, experiential education, and professional organization opportunities. Through the Early Assurance Program, the college is in communication with high school students. Once enrolled at Belmont, early assurance students are assigned a pharmacy faculty member as an advisor and encouraged to become engaged with the college. Upon matriculation, pharmacy students are also assigned a pharmacy faculty member as an academic advisor. Students and advisors meet at least two times per semester and discuss academic work as well as career preparation. In the first semester, students are introduced to various career options via guest lecturers in Dean's Hour. During the second professional year, students declare an academic concentration in one of five areas. Students complete at least four of six electives, one Introductory Pharmacy Practice Experience, and at least two of ten Advanced Pharmacy Practice Experiences focused in their concentration. Student organizations sponsor career preparation activities, including curriculum vitae reviews, mock interviews, and panels of local pharmacy residents for question and answer opportunities. Students also have opportunities to attend local career and residency showcases and national meetings. Job and post-graduate training placement is tracked through the BUCOP Office of Student Affairs and the Belmont University Office of Career and Professional Development. Building a strong, diverse, and prepared pharmacy pipeline is a continual focus at BUCOP. By implementing career preparation strategies throughout the curriculum, students are mentored and prepared to enter the profession upon graduation.

Building a Recruitment Pipeline: It Extends Beyond “Apply”. Deborah Sturpe, *University of New England*, Sarah B. Vincent, *University of New England*, Matthew M. Lacroix, *University of New England*, Wallace Marsh, *University of New England*, James R. Krebs, *University of New England*. The University Of New England College Of Pharmacy prides itself on the personal attention given to our students, and this level of attention starts within our recruitment process. Although traditional recruitment events geared towards high school and undergraduate college students exist, we have also strengthened our pipeline in two unique ways. First, to better retain students enrolled in our pre-pharmacy program we have created a Pre-Pharmacy Coordinator faculty position. This faculty member engages with the pre-pharmacy students by serving as their academic advisor, by delivering a series of preparatory courses, and by serving as a liaison between our undergraduate and PharmD programs. We have also strengthened the links between our professional student organizations and these pre-pharmacy students. Second, our Admissions Committee utilizes a Communications Plan to reach students from the time they first apply in PharmCAS all the way until they set foot on campus after program acceptance. This plan includes monthly communications that highlight unique features of our program that introduce applicants to our administrators, faculty, and students, and that showcase life in the city of Portland. All accepted applicants also receive personal communications from our Dean and faculty after acceptance.

Building a Direct-entry Pathway into a Doctor of Pharmacy Program. Tayla Rose, *Northeastern University*, Michael Conley, *Northeastern University*, Heather Clark, *Northeastern University*, Russel Roberts, *Tufts Medical Center*, Michelle Jacobs, *Northeastern University*, Karen N. Stanley, *Northeastern University*, David P. Zgarrick, *Northeastern University*. Northeastern University has historically admitted students as freshman into the pharmacy major that complete two years of study prior to progressing into the first professional year (P1) of the School of Pharmacy’s four-year Doctor of Pharmacy (PharmD) program. For many years this early assurance pathway served as the sole source of the 145 students entering the P1 year of the PharmD program. Since peaking in 2011 the number of freshmen applying for the pharmacy major at Northeastern has decreased by 39%. At the same time, applicants to the pharmacy major compete against an increasingly large and well qualified pool for undergraduate admission to the university. The university’s annual goal is to enroll the 2800 best-qualified undergraduates regardless of major. These two trends have resulted in the number of freshman pharmacy majors decreasing from 160 in 2011 to 91 in 2015. Recognizing that the early assurance pathway may no longer supply the 145 students needed to fill the P1 class, the School of Pharmacy developed a direct-entry pathway, allowing qualified students who have received Bachelor’s degrees and meet prerequisites to enter directly into the P1 year. In 2013 the SOP Admissions Committee worked with administrators to develop marketing, application, admissions and matriculation procedures that allowed 11 students to enter the P1 year in Fall 2014. Efforts continue to further develop these procedures to allow 20-25 students to enter the P1 year in Fall 2016 and upwards of 40-50 students in Fall 2017 and future years.

Building the Pharmacy Pipeline at Drake University. Jessica Lang, *Drake University*, Renae J. Chesnut, *Drake University*, Frank J. Caligiuri, *Drake University*. **Objective:** Promote the profession of pharmacy and recruit potential pre-pharmacy student candidates through the use of targeted recruiting strategies. **Background:** Over the past few years, the number of applications to pharmacy programs has been in decline. One of the reasons for this is a decline in the number of

students who understand the role of a pharmacist and the different opportunities and career pathways that are available to those that pursue careers in pharmacy. Drake University’s College of Pharmacy and Health Sciences has actively engaged students in high school, middle school, and even students in elementary school and younger in programs and activities that promote the profession of pharmacy. **Strategies:** The College of Pharmacy and Health Sciences has engaged students in programs and activities on Drake’s campus, within their schools, and in community settings. These programs and activities include having students participate in mock pharmacy classes, lab simulations, providing tours of College labs and facilities, direct interaction with pharmacy students and faculty, interacting with students about their own experience with pharmacy, and visiting with students at career and college fairs. These programs and activities have helped to promote and raise awareness about opportunities within the pharmacy profession. **Conclusion:** The targeted recruitment strategies employed by the College of Pharmacy and Health Sciences have led to student participants applying for admission to the Drake University pre-pharmacy program.

Building the Pharmacy Pipeline through Dual Degrees, Certificate Training Programs, and a Pre-Health Professions Tract. Mark S. Johnson, *Shenandoah University*, Katelyn M. Sanders, *Shenandoah University*, Karen Abraham, *Shenandoah University*, Jamie R. Klucken, *Shenandoah University*. An important challenge facing Schools of Pharmacy today is creating unique and innovative opportunities for students in a changing healthcare environment. Shenandoah University Bernard J. Dunn School of Pharmacy is building the pharmacy pipeline through innovative methods by offering dual degrees and a pre-health professions track. In 2000, Shenandoah graduated its first class of Pharm.D./MBA students. Through the dual degree track, students efficiently earn two complimentary degrees in four years with a substantial financial benefit and increased marketability. The program’s 159 graduates have proven successful in a variety of management related fields and will be highlighted. Secondly, as health care becomes more personalized and information-driven, Shenandoah is preparing students to meet workforce needs by developing dual degree programs based on its past success with pharmacogenomics. These include the Pharm.D./M.S. Genomics, Pharm.D./M.S. Informatics, Pharm.D./M.S. Public Health degrees, allowing an efficient and cost effective use of compressed scheduling to earn two to three degrees. Additionally, interprofessional graduate certificates are being developed in genomics, informatics, and care coordination. Lastly, a unique pre-health professions program to attract and retain high quality undergraduate students interested in health professions is being developed. Highlights include a strategic curriculum with cohorted students allowing for more application and critical thinking in classes and laboratories, early and frequent graduate program faculty and student contact to better assure student success, seminar courses and co-curricular activities, and preparation for the admissions process, with an option of a health and wellness minor and certification as a health coach.

Building the Pharmacy Pipeline – Integrating Holistic Approach and Assessment in Admission Strategies. Siu-Fun Wong, *Chapman University*, Lawrence M. Brown, *Chapman University*, Ronald P. Jordan, *Chapman University*. **Background:** CUSP’s goal is to educate “practice-ready” and “team-ready” pharmacists. CUSP believes diverse student pharmacist population in age, life experience, and culture creates a rich environment which will optimize personal and professional development. CUSP utilizes a holistic process in the student applicant selection. **Process:** On-campus interview selection uses

a scoring rubric to quantify parameters relevant to the School's mission, vision and values (service, advocacy, leadership, intellectual curiosity, emotional maturity, empathy, ethical behavior, motivation, industriousness, and communication abilities). Special efforts made to recruit well-qualified Hispanic, Native-American, and African-American students. Interview screening includes a full range of objective and subjective information such as personal statement, GPA, PCAT, letters of recommendation, extracurricular and leadership experience were used. On interview day, applicants are assessed individually and in group activities for critical thinking, professionalism, communication, and teamwork skills. Data from the Clifton Strengthsfinder™ and Health Sciences Reasoning Test (HSRT), administered during orientation, were used for continual quality improvement (CQI). **Results:** Student demographics showed diverse characteristics in age, ethnicity, and education background. Above normal regional proportion of "under-represented" groups recruited are progressing well academically and extracurricularly. Standardized test results such as Strengthsfinder™ provided data to develop student self-awareness and teamwork. PCAT, undergraduate GPA, and HSRT identified as significant predictive factors for recruitment. Scoring rubrics for faculty interviews and group activities require further examinations to differentiate applicants. **Conclusion:** The admission process appears effective to meet the institutional objectives. Analysis are ongoing to identify and verify predictive factors to recruit successful candidates and to improve admission process.

Building the Pharmacy Pipeline: Admissions Criteria and First Year Performance. Amy Diepenbrock, *University of the Incarnate Word*, Bradi L. Frei, *University of the Incarnate Word*, Helmut B. Gottlieb, *University of the Incarnate Word*, Lila P. LaGrange, *University of the Incarnate Word*, Anita T. Mosley, *University of the Incarnate Word*, Marcos Oliveira, *University of the Incarnate Word*, Arcelia M. Johnson-Fannin, *University of the Incarnate Word*. FSOP is dedicated to continued quality improvement and assessment of its program. The School reviews academic performance in first professional year since students who struggle academically in the first year often continue to have difficulties throughout the program. An ad-hoc taskforce was appointed by the admissions committee to compare student performance in the first year of the pharmacy program with admission criteria. Evaluation of the admission variables of students admitted to the program are correlated with performance in the first year of pharmacy coursework. Admission variables include PCAT score, pharmacy technician status, achievement of advanced degree, age upon admission to pharmacy program, critical thinking score, spontaneous writing score, and interview score. The first year academic performance variables include enrollment in supplemental instruction, overall GPA in P1 coursework, and Biochemistry and Anatomy and Physiology course grades. Correlation and t-test statistics are performed comparing performance of pharmacy school cohorts and admission criteria with student academic outcomes. FSOP realizes it is important to pay attention to our "pharmacy pipeline." Continual review of student performance and how it is correlated with admission criteria are part of that process. This data can be used to support modifications of admission criteria.

Building the Pharmacy Pipeline: A Residency Preparation Course. Monica L. Miller, *Purdue University*, Ashley S. Crumby, *Purdue University*, Alex N. Isaacs, *Purdue University*. **Objectives:** To describe the evolution of a residency preparation elective course. **Methods:** This elective course, offered for the first time in Fall 2013, focuses on preparing students for the residency search and application process through a combination of discussion topics and interactive

exercises. Included in the course content are discussions regarding residency program comparison and selection, navigation of and preparation for the ASHP Midyear Meeting, and development of application materials. Students also participate in both a mock interview session and a mock Match. Feedback was provided regarding all assignments and topics. Course interest has been tracked and results from a post-course survey have aided in course modification. **Results:** To date, 96 students have successfully completed the course. Since 2013, interest has increased by 70% in two years (24 in 2013 to 40 in 2015), and an additional faculty member was added to accompany the course growth. Student feedback resulted in expansion of the course from 8 to 12 weeks in 2014, tailoring of discussion topics to meet student needs, and the implementation of a formal mentoring program. Results of the mock Match process reveal 50% of students were matched with their first choice and all students matched with at least their 3rd choice. Student application materials demonstrated a marked improvement throughout each semester. **Implications:** This program description can help other institutions when developing residency preparation activities by providing details about successes in course evolution.

Building the Pharmacy Pipeline: Career Mentoring at the University of Wyoming School of Pharmacy. Jaime R. Hornecker, *University of Wyoming*, Michelle L. Hilaire, *University of Wyoming*, Kem P. Krueger, *University of Wyoming*, Tonja M. Woods, *University of Wyoming*, Lauren R. Biehle, *University of Wyoming*, Cara A. Harshberger, *University of Wyoming*, Allison Mann, *University of Wyoming*, Leena D. Myran, *University of Wyoming*, Joseph F. Steiner, *University of Wyoming*. The University of Wyoming School of Pharmacy faculty and administration have given considerable thought to career mentoring and student development. A student survey identified career mentoring as a need in our curricular and advising processes. A new role of clinical advisor was created for clinical faculty to be paired with existing academic advisors to advise students on the myriad of rotation and career opportunities. A career planning elective focusing on exploration of post-graduate training and career opportunities was developed. Faculty and preceptors discuss career pathways within their respective disciplines, establish mentoring relationships, and facilitate content and activities focused on job searching and interviewing. Through strategic planning, the faculty determined that our pedagogical focus should be to develop scholar practitioners who create and use evidence-based approaches to deliver patient care and pharmacy services. Opportunities for curricular and co-curricular interventions were identified and marketed to develop the scholar practitioner and facilitate career development. These opportunities begin during student recruitment (through activities such as Showcase Saturday, the Summer Institute, and the ASPIRE program, all of which introduce high school and pre-pharmacy students to career opportunities in pharmacy) and continue through the P4 year. IPE experiences are embedded in the curriculum to model realistic practice to students early in their career journey. Finally, opportunities exist for students to conduct research through independent study courses or by simply partnering with faculty. Our excellent job and residency placement rates are indirect evidence that our strategies are successful and have a positive impact on career success.

California Pharmacy Schools: Minority Enrollment Trends and Barriers. Shadi Doroudgar, *Touro University California*, Vanishree Rajagopalan, *Touro University California*, Amrit Bains, *Touro University California*, Xia Li Chen, *Touro University California*, Diana De Vore, *Touro University California*, Khin Htwe, *Touro University California*, Michelle Nguyen, *Touro University California*, Ga Rhee, *Touro University California*, Jamie Russell, *Touro University California*.

Background: Despite California's continually diversifying population, the demographics of California's health care workforce has remained relatively unchanged. This study explored minority enrollment trends in California pharmacy schools during the past ten years and identified barriers that underrepresented minority (URM) pharmacy students faced during the application process. The American Association of Colleges of Pharmacy (AACP) defines URM as Black or African American, Hispanic or Latino, Native Hawaiian or Other Pacific Islander, and American Indian or Alaska Natives. **Methodology:** This study consisted of two parts. (1) AACP California pharmacy school enrollment data from 2005 to 2014 was used to determine the demographics of California pharmacy schools. (2) A cross-sectional survey was administered to the Touro University California, College of Pharmacy (TUC-COP) classes of 2017 and 2018, to assess the common barriers to applying to pharmacy school. **Results:** The AACP data revealed similar percentage of average national enrollment of URM pharmacy students in 2005 (12.3%) and 2014 (12.4%). The average enrollment of minority students into California pharmacy schools in 2014 was 8.5% compared to 9.4% in 2005. The top three barriers to applying to pharmacy school reported by TUC-COP students (n=210; survey response rate 94%) were increased cost of tuition (43.4%), difficulty in meeting prerequisites (36.9%), and difficulty obtaining letters of recommendation (32.3%). **Conclusion:** National and California enrollment trends show no change in the enrollment of minorities. California URM enrollment remains lower than the national average. To improve enrollment, pharmacy schools should identify barriers for URM, and focus more on alleviating these barriers.

Career Mentoring: Helping Students Climb the Ladder to Success. Kelly M. Shields, *Ohio Northern University*, Jennifer Kline, *Ohio Northern University*, Jenelle L. Sobotka, *Ohio Northern University*. Our 0-6 direct entry program provides professional development and career mentoring over 6 years. Annual curricular and co-curricular activities contribute to ongoing student advancement. Students complete the following activities: First year: Upperclassmen mentors are assigned; students make pharmacy career group presentations to peers; complete the APhA Career Pathway program; StrengthsFinders assessment with reflection on career applications; participate in pharmacist and interprofessional education (IPE) shadowing with career application reflection. Second year: Curriculum vitae are developed with faculty review; IPE shadowing experiences occur with career application reflections; leadership book is discussed and students reflect on career application. Third year: Community IPPEs occur with career application reflection; students are matched with pharmacist mentors for participation in the Professional Commitment Ceremony. Fourth year: Institutional IPPEs occur with career application reflection; students reflect on career interests, strengths, weaknesses and goals to prepare for APPE placement. Fifth year: One-on-one career discussions with advisers occur; class discussions address emerging pharmacy career options. Sixth year: Career opportunities are highlighted via email and Polar Career Center; Career Fair conducted; one-on-one career guidance is available. Additional related opportunities include: Individual pharmacy faculty advisors assigned to aid in career planning; annual on-campus pharmacy career fair open to all students; student organizations have career development speakers, "Residency Week" and Mock interviews; Career Planning elective (examining steps from obtaining positions to future career endeavors) and Contemporary Health Issues elective (introducing unique pharmacy careers via guest speakers). Current employment and residency placement rates indicate career preparedness upon graduation.

Career Mentoring: The Road Both More and Less Traveled. Janet K. Astle, *Duquesne University*, Bruce H. Livengood, *Duquesne University*. **Background:** Career options for pharmacists have exploded as the market continues to diversify. Not only are there opportunities for pharmacists in a wide variety of novel practice settings, but the types of services that pharmacists provide in traditional settings have also rapidly evolved. Students are oftentimes unaware of these options. **Description:** The School of Pharmacy has implemented a series of Continuous Professional Development (CPD) courses that are interwoven throughout all four years of the professional curriculum. The CPD courses address career exploration, which is achieved through incorporation of the APhA Career Pathways program, discussion of residencies, fellowships, and other post-graduate programs, and inclusion of guest practitioners representing a variety of practice settings. Elective courses and academic concentrations allow students to tailor the curriculum to match their strengths and interests. Student faculty mentor meetings, opportunities for student organization involvement, and residency preparation workshops further contribute to career development. Assessment Strategies: As part of the CPD coursework, students complete self-assessment inventories and reflections that prompt deliberation over career options, give consideration to student level of preparedness, and assist in the selection of experiential rotations. **Implications:** In an increasingly diverse and competitive environment, it is important that students begin to identify potential career paths early in the process. Awareness of individual strengths and interests can assist in determining career options that may be a good fit. Early identification can also lead to student participation in opportunities for growth that can contribute to better preparedness and attractiveness as a job or post-graduate candidate.

Career Preparation for PharmD Students: From Job Networking to Enhancing Interviewing Skills. Janet H. Cooley, *The University of Arizona*, Sandipan Bhattacharjee, *The University of Arizona*, Hanna Phan, *The University of Arizona*. The University of Arizona College of Pharmacy (UACOP) offers multiple events yearly to help 3rd (P3) and 4th year (P4) pharmacy students identify job and postgraduate training opportunities and to prepare for interviews. The Preceptor/Residency Showcase offers an opportunity to practice and further develop communication skills. P3 students are required to attend (optional for P4 students) and network with representatives or preceptors from the UACOP's rotation sites, local and national residency programs and fellowships. Students also explore career opportunities as they meet and mingle with pharmacists, residents, and fellows from a wide range of practice settings. During Mock Interview Day, P4 students practice interviewing and P3 students observe and participate as interviewers. At Career Day, P4 students are interviewed by local companies for actual positions. The Residency & Fellowship Preparation Program was created in 2011 to provide longitudinal support, guidance, and mentorship to P4 students planning to apply for postgraduate residency or fellowship programs. Students attend multiple sessions led by faculty and former or current residents to discuss topics pertaining to residency/fellowship application processes. Individual sessions between student and mentor (s) are also provided. While many colleges may offer similar opportunities, it is the extensive mentoring over time that makes the UACOP program unique. Despite the availability of these career development opportunities at UACOP, we believe there is still room for improvement and are developing additions to the program such as tracking student interviewing abilities and progress, as well as tracking other program outcomes.

Continuum of Student Development: A 3-Tiered Approach in a 3-Year Program. Holly L. Byrnes, *Sullivan University*, Stacy L. Rowe, *Sullivan University*, Frank P. Facione, *Sullivan University*, Elizabeth R. Davisson, *Sullivan University*, Kimberly K. Daugherty, *Sullivan University*. Sullivan University College of Pharmacy (SUCOP) focuses on building the pharmacy pipeline through all phases of a student's professional development. Our accelerated 3-year program consists of novel, student-centered strategies to retain students and keep them in their admitted cohort for graduation. SUCOP provides community outreach to promote our profession as early as the high school level by participating in career fairs, providing health education, and offering pharmacy camp. We have developed collaborations with partner institutions to create pre-pharmacy curricula that satisfy SUCOP's pre-requisites, allowing students to transfer SUCOP credits retroactively to earn their bachelor's degree from their undergraduate institution. To ensure academic success throughout the program, SUCOP offers students the ability to longitudinally remediate courses. If multiple courses are failed or remediation unsuccessful, the student is offered a modified schedule to allow the student to continue taking courses while awaiting course retake. SUCOP offers English as a second language sessions to achieve English proficiency. A student-faculty advisor/advisee program contributes positively to students' academic and professional success. Additionally, student support services are available on-site for students with stressors that negatively impact progression. Career Services Office offers innovative lifetime career guidance from the first professional year and beyond graduation to develop the skills and employer network necessary for success. Students who have an interest in postgraduate education/training receive guidance and support through mentoring, workshops and student organization sponsored events. Upon graduation, students also maintain access to a variety of university resources which allows them to remain connected to the College.

Creating the Marshall University School of Pharmacy Pipeline to Admission. H. Glenn Anderson, *Marshall University*, Laura M. Rudolph, *Marshall University*, Terri Moran, *Marshall University*, Kelli Kerbwyl, *Marshall University*, Kevin W. Yingling, *Marshall University*. Over the past 20 years, a high aggregate demand index and favorable average annual wage has led to an explosion in the number of new pharmacy programs launched. This growth in number of pharmacy programs coupled with a stagnant growth in pharmacy school applications has led to significant competition for matriculating students. Future viability of programs is a concern unless admission pathways can be created, developed, and nurtured. The Marshall University School of Pharmacy has developed a multi-faceted process for addressing the current and future recruitment of students. The first involved expansion of the Student Services staff to account for the evolution of PharmCAS to a yearlong endeavor and the growing need for school support of program recruitment. Secondly, recruitment targeting high-yield peer institutions was implemented with use of IPEDs data. Third, facilitated matriculation pathways were pursued and established with regional peer institutions. Fourth, matriculation pathways were pursued and established within our parent institution that also provided mechanisms for achievement of undergraduate degrees. Fifth, creation of an ambassador program was undertaken and incentivized. Lastly, the school created pathways for social media engagement and use of echo-targeting. Future expansion of the recruitment process will be targeted at engaging K-12 students.

Determining Predictors of Academic Success Using Student Admissions Data. Lea S. Eiland, *Auburn University*, Paul W. Jungnickel, *Auburn University*, Laurie Gann, *Auburn University*, Philippe Gaillard, *Auburn University*. **Objective:** This study evaluated our admissions data to assess predictors of student success in our school of

pharmacy program. **Methods:** Two years of admissions data {pharmacy college admissions test (PCAT) scores, grade point averages (GPA), interview scores, etc.} of pharmacy students were evaluated and compared to selected student outcomes {10 course grades, GPA} to identify predictors of student success in the program. Statistical analyses were conducted via SAS comparing the classes of 2014 and 2015 separate and combined. **Results:** Data from 282 students were evaluated. Pre-pharmacy cumulative and science GPAs were the strongest predictors of final GPA and individual grades in science and therapeutic courses ($p < 0.001$); correlations ranged from 0.4 to 0.52 for separate and combined data. Cumulative GPA was the strongest predictor of success in the therapeutics course, $p < 0.001$. Science GPA was the strongest predictor in science courses, $p < 0.001$. PCAT composite scores correlated stronger with course grades (0.32-0.47) than final GPA (0.28-0.4) for the class of 2015 and combined data. Faculty interview scores weakly correlated with student outcomes (0.13 to 0.29) for the class of 2015 and combined data. Students initially deferred showed statistically negative correlations with final GPA and course outcomes (-0.25- -0.29) for all datasets. Prior degree nor assigned campus did not impact final GPA or grades in science courses for the class of 2014 or combined data. **Implications:** Admissions data may be class dependent when used to predict a student's success within a program. However, general correlations can guide the admissions committee's decision on student acceptance.

Developing a Cloud-Based Spreadsheet to Identify Early Academic Progression Issues. Adam C. Welch, *East Tennessee State University*, Adam Greever, *East Tennessee State University*, Carmen Linne, *East Tennessee State University*. **Background:** A master Google Sheet was developed by Office of Academic Affairs (OAA). Each faculty mentor was given a unique link that pulled data for their mentees from the Sheet. After each round of exams for P1 – P3 students, the OAA populated the Sheet with any student who scoreMentors were notified by email when the Sheet was updated and encouraged to meet with student and document interventions into an adjacent Sheet, managed by OAA. **Implementation:** The concept was discussed and supported at a Faculty Council Meeting. Afterwards, a workshop informed faculty of logistics of the process. The program began in Fall 2014 and expanded into mentor documentation in Spring 2015. **Results:** In Spring 2015, 10 of 23 faculty mentors (43.5%) documented 71 interventions (7.1 interventions/mentor). Out of 239 enrolled students, 122 (51.0%) were listed on the Sheet with an average of 2.04 courses per student. In the Fall 2015 semester, 9 of 19 faculty mentors (47.4%) documented 58 interventions (6.44 interventions/mentor). Out of 244 enrolled students, 129 (52.9%) were listed, averaging 1.95 courses per student. **Conclusions:** Sheet can be developed to track early difficulty in academic performance. While about half of mentors documented interventions, it is possible not every mentor had a mentee that needed intervention. More analysis is needed to see overall impact on progression rates. Results have been used by Academic Progression Committee during deliberation.

Development of a Demonstration Pharmacy Practice Event within HOSA-Future Health Professionals for National Pipeline Recruitment. Candido A. Chacon, *University of Colorado*, Lydia Hebbert, *University of Colorado*, Francis Selb, *University of Colorado*, Catherine L. Jarvis, *University of Colorado*. Applications to pharmacy schools and colleges have dropped nationally; therefore, there is a need to promote pharmacy practice to students interested in healthcare professions. HOSA-Future Health Professionals is a national organization for secondary, postsecondary and technical education students enrolled in health science courses or planning to pursue health careers.

While HOSA promotes a number of health professions, does not currently have a pharmacy practice event as part of its annual competitive events program. In order to petition for consideration as a competitive event, states have to conduct demonstration events for a minimum of two years. The University of Colorado Skaggs School of Pharmacy developed a pharmacy practice competitive event and offered it for two years at the annual Colorado HOSA conference to promote interest in the profession. The event includes a written exam administered to all registered participants, followed by a skills competition for top performers of the written exam. In 2015, 14 participants registered, 11 completed the written exam and eight completed the skills competition. In 2016, 49 participants registered, 49 completed the written exam and 11 completed the skills competition. Based on these data, the competition has generated more interest in pharmacy in Colorado over the past year. These experiences will be used to a) refine the pharmacy competitive event, b) recruit other states to participate and c) compile data to present to the National HOSA leadership for consideration as a pilot event, with the goal of pharmacy practice becoming a competitive event within the HOSA framework.

Development of an Alternate Progression Pathway and Proactive Support Process for Students with Academic Difficulties. Jeremy Hughes, *Pacific University Oregon*, David Fuentes, *Pacific University Oregon*, Jeff Fortner, *Pacific University Oregon*, Reza Karimi, *Pacific University Oregon*, Melanie Foepfel, *Pacific University Oregon*, Sarah Jane Faro, *St. Jude Children's Research Hospital*, Marina Suzuki, *Pacific University Oregon*, Steven Arendt, *Pacific University Oregon*, Jackson Ross, Catherine Marlow, *Pacific University Oregon*. In 3-year PharmD programs, certain students require additional time to demonstrate competency due to the program's accelerated nature. The purpose of this project was to develop an alternative progressions pathway which would provide a more supportive and proactive environment for the management of learners who experience academic issues. The Offices of Student Affairs and of Academics and Assessment, and the Student Progressions Committee (SPC) identified additional layers of support and options for students with academic difficulties to stay connected with the School of Pharmacy. Indicators of poor academic performance were identified and an alternative progression pathway was developed. A flow-chart was created to outline the management of academic issues, an action plan template was created to help students identify problems and solutions, and a list of resources was generated to assist faculty advisors in improving students' academic progress. The alternative progression pathway was developed and implemented to allow students to complete one year of the PharmD program in two successive years, versus taking a full academic year off to retake a failed course. The number of referrals to the SPC related to academic issues increased from 2 (Fall 2014) to 25 (Fall 2015), indicating a need for this alternative pathway. Alternative pathways for program completion can be utilized by students who are academically at risk to stay more connected with the program, receive ongoing faculty advising, and improve their academic performance. In addition, proactive and cooperative management of academic issues increases opportunities for programs to intervene and help students.

Early Identification and Intervention of "At Risk" Students in a Doctor of Pharmacy Program. Jeffery D. Evans, *The University of Louisiana at Monroe*, David J. Caldwell, *The University of Louisiana at Monroe*, Shawn M. Manor, *The University of Louisiana at Monroe*. During the summer of 2015, the University of Louisiana at Monroe School of Pharmacy identified a need to decrease the number of students graduating with more than four years of time in pharmacy school. A faculty led initiative identified potential changes to our

current remediation plan that would assist faculty in identifying students at risk of failing classes and provide an incentive to those students to complete self-remediation. Students who took advantage of self-remediation were granted a chance to remediate the class if the student did not pass the class by less than five percentage points. The policy was implemented in Fall 2015 with the incoming class and has been very successful in reducing the number of students failing in the first semester of pharmacy school.

Early Impacts of a Comprehensive Remediation Strategy in a School of Pharmacy. Keri Hurlley, *West Coast University*, Kyle M. Sousa, *West Coast University*, Ettie Rosenberg, *West Coast University*, Gauri Sabnis, *West Coast University*, Reza Taheri, *West Coast University*. ACPE Standards 2016 require schools of pharmacy to implement and assess student progression policies which monitor student performance. Remediation policies serve as one such strategy to identify academically at-risk students, mitigate attrition and facilitate self-directed learning. Here, we describe the development of a comprehensive remediation strategy aimed at keeping underperforming students on pace for successful program completion. West Coast University School of Pharmacy employs a remediation policy which has two components: proactive remediation and course remediation. Proactive remediation may occur throughout a semester, and aims to promote achievement of learning outcomes. Proactive remediation requires students to self-identify and request tutoring or additional assistance from faculty and/or Student Success Coordinator to address behavioral, motivational, attitudinal or other non-academic issues. Course remediation is a more comprehensive process initiated when a student has failed a specific course. In such a circumstance, an individual action plan (IAP) is designed for each student to address identified deficiencies. All IAPs include teaching, learning, and assessment components. In addition, most students in course remediation are required to meet with an on-campus Student Success Coordinator. To date, 26 course remediations have taken place with all being successful. A total of four students have not qualified for remediation, resulting in an attrition rate of 4.2%. Collectively these data suggest that this remediation policy promotes persistence and mitigates attrition. An opportunity for improvement has been identified to engage students more directly in proactive remediation. To this end, we are currently piloting a refined proactive remediation approach.

Engaging Current Students with the Incoming Class: Creation of a Pharmacy Admissions Student Ambassador Program. Marcia L. Parker, *Keck Graduate Institute*, Jeniffer Hernandez, *Keck Graduate Institute*, Meera Patel, *Keck Graduate Institute*. **Objectives:** To design a program that keeps incoming students engaged through matriculation by connecting them to mentors in the form of current student ambassadors. **Methods:** All members of the P-1 and P-2 class were invited to apply for the Pharmacy Admissions Student Ambassador Program (PASA). After completing an application process including written application, professional references, and in-person presentation, seventeen students were selected for the program. As incoming students submitted their acceptance deposit, they were assigned to a student ambassador. Ambassadors were then responsible for reaching out to the incoming student to serve as a resource for questions and advice on transitioning to pharmacy school. In addition, ambassadors participated in virtual information sessions, meet and greet activities, and recruitment fairs, as well as provided tours for interview and visitation days. **Results:** Participation of incoming students in engagement activities averaged 34%, with participation varying dependent upon the type of activity. Ambassador participation was 100%, with each ambassador actively participating in an average of three activities

along with outreach responsibilities for an average of four incoming students per ambassador. **Implications:** Having an ambassador to serve as a mentor for incoming students can be particularly effective for students who do not have access to these sorts of resources in their own communities. In addition, participation of ambassadors allows current students to show pride in and take ownership of their school and provide ongoing feedback on the most effective ways to stay connected to the incoming class.

Enhancing the Pharmacy Pipeline: Creating a Conduit to Enhanced Recruitment Through a Multi-disciplinary Task Force.

Stacey Curtis, *University of Florida*, Carinda Feild, *University of Florida*, Deborah Robinson, *University of Florida*. Pharmacy school applicants are declining nationally. The University of Florida (UF) College of Pharmacy has taken a dynamic approach to enhancing the pharmacy pipeline through coordinated strategies aimed at education regarding the profession, creation of partnerships with academic institutions, and cultivation of individual relationships. A multidisciplinary specialized task force focused on recruitment, admissions, and retention was convened. The task force was charged and funded to recommend, prioritize, and implement new and creative initiatives that would improve recruitment. We highlight three key areas of task force emphasis below. Outcome metric documentation is ongoing. The college is educating the future candidate pool grades K-12 through career presentations and programming conducted by pharmacy faculty and students. Field trips to the college are conducted for middle and high school students. The college has committed to increasing awareness of the profession at the university level by offering an undergraduate course at UF on general health and wellness topics and by educating selected health and science majors about careers in pharmacy. The college is paving new pathways to pharmacy through partnerships with other colleges within UF, the creation of bridge programs with state colleges, and enhanced pre-pharmacy admissions counseling. Developing relationships with individual students is a high priority. The college creates relationships through peer engagement during the interview process and following the interview via personalized direct outreach. Scholarships are awarded to assist newly admitted students with their educational costs and welcome packets are sent to encourage their commitment to the college and reinforce recruitment efforts.

Establishing a Health Professions Pathway Program to Recruit Underrepresented Minority Pharmacy Students.

Aisha M. Moultry, *Texas Southern University*, Rodrick D. Jones, *Texas Southern University*. The national trend of a decreased amount of underrepresented minorities, including African Americans and Hispanics in health professions has been reflected in the PharmD program at Texas Southern University (TSU). Although TSU is a Historically Black University, there is a disproportionate amount of underrepresented minorities in the professional program in comparison to undergraduate pre-pharmacy students. Retention data for the pre-professional phase reveals that the undergraduate students are underprepared upon entering the University, putting them at a disadvantage academically and making them less competitive. Additionally, standards by the Accreditation Council for Pharmacy Education to ensure a satisfactory progression rate led to an increase in admissions standards for the College, making it more difficult for some students to be admitted. To address these issues, a Health Professions Pathway Program (HPPP) was established in 2015 to increase the admissions rate of underrepresented minorities in the PharmD program by recruiting high-achieving students and providing retention programming during the pre-professional years. The program was designed to enhance recruitment and retention by: establishing partnerships with health profession high

schools, improving technology-based marketing efforts, and improving academic advising and tutoring/entrance exam preparation of pre-pharmacy students. Additionally, high-performing students meeting set criteria were admitted into a special cohort that would gain automatic admissions into the pharmacy program if they maintained retention requirements of the program. After 1 year of implementation, there has been a 100% retention rate of the first cohort of 9 students in HPPP and 3 partnerships with predominantly minority high schools have been created.

Evaluation of Pre- and Postgraduate Pharmacy Training Programs. Ayesha Khan, *Chicago State University*, Angela Riley, *Binghamton University*, Elmer J. Gentry, *Chicago State University*.

Background: Career mentoring and guidance is a valuable resource for pharmacy candidates and pharmacists. High school career explorers programs provide a structured learning environment for candidates interested in pharmacy as a career, while pharmacy residencies provide additional development post-graduation. The Chicago State University College of Pharmacy (CSU-COP) is actively involved with both spectrums of the pharmacy training pipeline including a high school enrichment program and pharmacy residency programs. CSU-COP's summer program is a collaborative initiative between a local school district and pharmacy technician college that includes science, math, writing, and health professions enrichment. Participants are provided opportunities to attend information session on various health professions and visit different pharmacy settings. On the other end of the training spectrum, the college is actively involved in promoting pharmacy residency programs. **Objective:** To evaluate both ends of the pharmacy training pipeline, the college aims to evaluate the impact of the enrichment program in participant interest in pharmacy, and on a larger scale assessing career preparedness of residency trained pharmacists. **Methods:** Participants completing the enrichment programs are being tracked regarding changes in educational and career choices. This data will be compiled from participants over the past three years (since program inception). A separate survey distributed to recent pharmacy residency graduates assesses the pharmacist's perception of their residency training in preparing them for their current position/future goals.

Evidence-Based Modifications to Admission Requirements and Processes. Marion L. Pearson, *The University of British Columbia*, Jennifer E. Chatterton, *The University of British Columbia*, Carol S. K.

Kuang. Significant curriculum change provides a stimulus to evaluate admission requirements. At The University of British Columbia (UBC), such an evaluation prompted recent changes in prerequisites, modification of the grade point average (GPA) calculation, removal of admission requirements including the Pharmacy College Admission Test (PCAT) and reference letters, and streamlining of the multiple mini interview process. Particularly in-depth analyses were conducted to examine a physics prerequisite and the PCAT. Findings from the physics analysis included: 1) the literature provided little support for physics as a prerequisite; 2) most topics were covered in high school physics courses; 3) few topics were relevant to the pharmacy curriculum; 4) transfer credit rules for physics courses were problematic for target applicants from other institutions; 5) physics was not required for 5 of the 10 pharmacy programs in Canada nor for most other health professions programs at UBC. Findings from the PCAT analysis included: 1) the literature was equivocal on the predictive value of the PCAT; 2) GPA was more strongly correlated than PCAT score with PY3 course average ($r = 0.36$ vs. $r = 0.16$) and neither were correlated with PY3 practicum performance ($r = 0.07$ vs. $r = -0.05$); 3) the limited number and urban locations of test centers disadvantaged

target applicants; 4) PCAT application and administration dates were poorly aligned with the admissions cycle; 5) the PCAT was not used at 8 of 10 pharmacy programs in Canada. These analyses were instrumental in garnering faculty support to remove the physics and PCAT requirements.

Execution of a Strategic Marketing Plan that Increased Applications and Interest in the Pharmacy Profession. Amy M. Tiemeier, *St. Louis College of Pharmacy*, Elizabeth Keserauskis, *St. Louis College of Pharmacy*, Brenda L. Gleason, *St. Louis College of Pharmacy*, Scott K. Griggs, *St. Louis College of Pharmacy*, Donald R. Rickert, *St. Louis College of Pharmacy*, Alexandria Wilson, *St. Louis College of Pharmacy*, Jamie L. Woodyard, *St. Louis College of Pharmacy*. While transitioning to a new Doctor of Pharmacy curriculum with the addition of a third undergraduate year, St. Louis College of Pharmacy (STLCOP) had the unique opportunity to attract a larger than normal P1 transfer cohort for Fall 2016. As an institution that typically has 80-90% of its P1 cohort comprised of students progressing from our pre-pharmacy curriculum, only those students who started at STLCOP as undergraduate junior transfers in Fall 2015 are progressing into the professional program. This circumstance necessitated that 65% of the cohort be filled with P1 transfer students. To address this unique opportunity, the Marketing and Communications Department created and executed a strategic marketing and advertising plan designed to build awareness of pharmacy as a career option, drive traffic to the College's website, build the pipeline of inquiries, and ultimately increase PharmCAS applications to STLCOP. Tactics executed included traditional advertising; digital advertising; marketing automation and web-based behavioral engagement; email marketing campaigns; content marketing for social engagement; relationship building with regional and feeder schools; name purchases and retargeted advertising; association conference sponsorship; refining the campus visit experience; leveraging alumni; and enhanced internal communication. STLCOP has increased inquiries and applications during a time when many schools of pharmacy are facing a decline in applications. Additionally, late-cycle applications from students who will take the July PCAT were received—a sign that, in addition to attracting the interest of pre-pharmacy students in our target markets, strategic plan efforts successfully increased interest in the profession of pharmacy to generate new applications.

Holistic Admissions: Looking Beyond the Scores. Jennifer S. Williams, *The University of Tennessee*, Angela Finerson, *The University of Tennessee*, Marie A. Chisholm-Burns, *The University of Tennessee*. The University of Tennessee College of Pharmacy (UTCOP) uses a holistic admissions process to select applicants with the greatest potential for success. Upon verification, the Director of Admissions reviews the applicant's PharmCAS application for traditional factors such as overall GPA, science GPA, PCAT scores, and letters of recommendation, as well as other factors, such as the applicant's background, extracurriculars, coursework, and academic rigor. After the initial screening, select applicants are invited to an interview day where each applicant interviews with one student member and one faculty member of the admissions committee and writes a short essay on a given prompt. During the interview, committee members evaluate applicants based on several categories: career exploration, motivation to pursue pharmacy, intellectual curiosity, professionalism, leadership, work ethic, compassion, and communication skills. Rubrics are used by interviewers to score the applicant's essay, interview, and their letters of recommendations. The admissions committee then discusses each candidate's rubric scores along with their traditional factors. The committee further discusses applicants

falling below UTCOP expectations in certain areas. For these applicants, the committee reviews specific interview responses and the PharmCAS application for additional consideration such as personal hardship and upward trends in grades. Comparisons have shown no difference in overall performance of students once admitted. By using the holistic admissions process, UTCOP finds the best future pharmacists, not just the best application. The process enables the college to have students with a wide variety of backgrounds and experiences, creating a richer learning environment.

Holistically Identifying Qualified Applicants for Admission to the D'Youville College School of Pharmacy. Mudit Mudit, *D'Youville College*, Timothy Hutcherson, *D'Youville College*, Christopher J. Jadoch, *D'Youville College*, Robert H. Leopold, *D'Youville College*, Adinoyi Garba, *D'Youville College*, Chau Nguyen, *D'Youville College*, Thomas C. Suchy, John Rutowski, Canio J. Marasco, Jr., *D'Youville College*, Beverly Taggart, *D'Youville College*, Kathryn Stricker, *D'Youville College*. The pharmacy workforce plays a crucial role in outcome-driven health care services. This is especially true in modern medicine, where patients serve as the focal point of care. Because of this highly integrative patient-centered environment, US doctor of pharmacy (PharmD) programs have become increasingly interested in novel ways of evaluating applicants' abilities to complete rigorous PharmD curricula and effectively serve the profession. In addition to new admissions approaches, programs have found ways to further distinguish themselves from their competitive peers via novel recruitment, retention, remediation, and career mentoring strategies. D'Youville College (DYC) is an independent institution of higher education that not only provides academic, social, spiritual, and professional development but encourages students to lead compassionate, productive, and responsible lives. The School of Pharmacy (SOP) is uniquely positioned, along with other health care programs offered at DYC, to prepare students to become tomorrow's pharmacy practitioners and advance the profession through critical inquiry, research, scholarship, and service. The admissions committee of the SOP practices faculty-driven admissions and recognizes the importance of both cognitive and non-cognitive factors when assessing applicants. These valuable factors include academic record; Pharmacy College Admission Test (PCAT) scores; onsite mission-driven essays and PharmCAS personal statements; letters of reference; teamwork; grit test; degrees attained; rigor of previous higher education institutions; and interview performance on situational judgment questions during multiple mini-interviews (MMI). Overall, the DYCSOP values students who demonstrate leadership, social responsibility, effective collaboration, critical inquiry, respect for diversity, zeal for life-long learning, a drive for excellence, and professionalism.

Impact of Facebook and Twitter Social Media on Recruiting PharmD Students. Nicole Gallardo, *University of Nebraska Medical Center*, Christopher Shaffer, *University of Nebraska Medical Center*. **Purpose:** To evaluate whether the use of Facebook and Twitter impacted the recruitment of Doctor of Pharmacy students to the University Of Nebraska College Of Pharmacy (UNMC COP). **Methods:** Incoming first year pharmacy students were surveyed in regard to influences and tools used in their process to select a pharmacy school. The 17-question survey queried students on demographics, PharmD selection process, use of social media, factors influencing their decision to attend UNMC COP, and additional feedback related to the UNMC COP social media accounts. **Results:** A total of 42 students (67% of incoming class) completed the survey. Demographic information included: average age=22 years, 61% female, 20% minority population, 66% from rural areas. Cost, curriculum, location and

faculty were key factors in students' selection of programs to apply for. Two-thirds (67%) of participants applied to 1-3 schools, which they researched predominately via websites, web search engines, and communications with college admissions. While the college website and emails were listed as the most useful tools in researching the UNMC COP PharmD program, Facebook usefulness was tied with phone calls to admissions at 23% each. Inquiries regarding students' social media use confirmed that Facebook was the most used, and most preferred platform among survey participants. **Conclusions:** While social media was not a deciding factor in their decision making process, it has potential to be a communication tool to reach prospective students. Additionally, social media may be acting as a "gateway" by exposing student to the UMNMC PharmD program.

Impact of Required Minimum Percentiles in PCAT as Criteria for Admission. Eliud Hernandez, *University of Puerto Rico*, Myriam L. Gonzalez-Cordero, *University of Puerto Rico*, Rafael Garcia, *University of Puerto Rico*, Betty A. Torres, *University of Puerto Rico*, Maria E. Espinosa, *University of Puerto Rico*, Josephine Picorelly, *University of Puerto Rico*, Christine M. Raymond, *University of Puerto Rico*, Wanda T. Maldonado, *University of Puerto Rico*. The admissions process may represent a challenge to Schools of Pharmacy. The process at the University of Puerto Rico (UPR) aims to recruit the candidates with the highest potential to succeed in a rigorous academic program. One of the main criteria for admission to the program are the PCAT percentile level and GPA. The objective of this study was to examine if there is a correlation between the required minimum percentiles in all PCAT sections and student performance from P1 to P2. Data on the general GPA on admission (GPA1) and science and math GPA on admission (GPA2) was collected for group 1 (GPA1 = 3.63 ± 0.23 ; GPA2 = 3.72 ± 0.21 ; n=179) before and after establishing the aforementioned requirement for minimum PCAT percentiles in Biology and Chemistry sections (group 2) (GPA1 = 3.72 ± 0.21 ; GPA2 = 3.66 ± 0.28 ; n=89). The minimum requirement was extended later for all PCAT sections (group 3), and data was collected (GPA1 = 3.64 ± 0.24 ; GPA2 = 3.56 ± 0.31 ; n=89). One way ANOVA was used for overall differences. Bonferroni's test showed significant differences in GPA1 (p=0.012) and GPA2 (p=0.008) when comparing groups 1 and 2. Marginally significant differences were found between groups 2 and 3 (p=0.06 for GPA1 and p=0.086 for GPA2). There were no significant differences between groups 1 and 3 for neither GPA1 (p=0.98) nor GPA2 (p=0.89). The changes in PCAT requisites seemed to improve the quality of the admitted candidates, although it seems to vary by cohort.

Implementation of a Faculty Advisement Program for Students (FAPS) Using Academic and Career Advising. Karl D. Fiebelkorn, *University at Buffalo, The State University of New York*, Christine Stumm, *University at Buffalo, The State University of New York*, Jaime L. Maerten-Rivera, *University at Buffalo, The State University of New York*, Jennifer M. Hess, *University at Buffalo, The State University of New York*. ACPE recognizes pharmacy students need academic and career advising in Standard 14.4. However, AACP graduating student survey responses suggest schools are not addressing this. In 2015, 16% of students nationally disagreed that academic advising met their needs, and 13% reported they did not utilize this. Similarly, 21% nationally disagreed career planning and guidance met their needs, and 20% reported they did not utilize this. Our school began implementing FAPS targeting P1 students (n=138) to help in "Building the Pharmacy Pipeline." FAPS is multifaceted. First, students were matched to 52 faculty advisors and attended an informal "Meet your Advisor" luncheon during orientation. Students were also required to

meet with their advisor at least once per semester, and advisors were encouraged to discuss academic issues (e.g., course concerns, electives), special programs (e.g., dual degree, research programs), pharmaceutical areas (e.g., ambulatory care, pharmacoeconomics) and career areas. Second, an Alumni Ambassador Mentor Program was offered to introduce students to professional career opportunities under the guidance of graduates working in a variety of practice settings. 85 students and 36 alumni participated. Third, students attended mandatory weekly "All-School" conferences throughout the semester. Most focused on career options relevant to students and involved presenters from a variety of practice settings. Topics included: residency/fellowship information, research opportunities, and dual degree options. Finally, students were encouraged to actively participate in pharmacy student organizations and to attend Career Day and networking events. This gave students an awareness of pharmacy areas to guide them on a career path.

Implementation of an Enrollment Management Platform (EMP) to Enhance Candidate Yield During the Admissions Cycle. Gregory B. Hetrick, *Manchester University*, Kasey A. Jones, *Manchester University*, Tracy L. Brooks, *Manchester University*, Jennifer A. Henriksen, *Manchester University*, Joseph K. Bonnarens, *Manchester University*. **Objective:** Develop and implement an enrollment management platform (EMP) into a pharmacy program's admission process to help increase the yield of qualified candidates within the annual admissions recruitment cycle. **Methods:** Working with undergraduate admissions, our program expanded the University's EMP to include the pharmacy program. The EMP provides a program with an opportunity for customized communications throughout the recruitment and matriculation of a student candidate by creating a unique web page for each student. Based on the status of the student (such as inquiry, applicant, admit, deposit, matriculants), the web page and personalized emails address specific issues related to the student's status. This platform provides admissions personnel with the ability to easily monitor student engagement through each step of the admissions process. **Results:** During the first year of use, we have been able to clearly identify the level of student engagement in the admissions and matriculation process. The platform has provided our program with metrics to help predict student interest in our program, likelihood to deposit if offered admission, and likelihood of "melting" from the matriculation process. While the EMP has already demonstrated value, we predict that the platform will also enhance the matriculation process by clarifying communications regarding required deadlines for specific checkpoints/activities to be met prior to the start of new student orientation. **Conclusions:** The investment in the EMP has proven to be a valuable addition to the program's admissions and matriculation process. The platform has also expanded the program's communication opportunities with other audiences during the year.

Implementing Group Interviews for Student Admissions at a Large Urban University. Dan Potenzieri, *Long Island University*, Antony Pham, *Long Island University*, Suzanna Gim, *Long Island University*. For the 2015-2016 admissions cycle, Long Island University (LIU) College of Pharmacy implemented a new group interview process to improve assessment of the ACPE affective domains and efficiency of admissions. LIU Pharmacy has a target entering class of approximately 200 students, requiring approximately 300 interviews to be conducted by volunteer faculty, staff and alumni annually. The previous admissions process required 15 sessions (10 interviewers per session; 20 candidates per session) to conduct individual 40-minute interviews with two interviewers for each candidate. The new process which includes a group interview, critical thinking exercise, and

campus tour, allows the same number of candidates to be interviewed in four all-day sessions. With two interviewers for every group of five candidates, 20 interviewers are required per session (75 candidates per session). Compared to individual interviews, group interviews allow students the opportunity to hear other students' responses to the same questions and share personal experiences, which may decrease rehearsed responses. This may also improve student self-awareness and motivate more competitive performance and responses. The critical thinking task allows evaluators to observe candidates in a team-work setting. Through the activity we are also able to assess ethical reasoning and leadership which are often more challenging to assess through traditional interview questions and responses. Group interviews offer an alternative to traditional individual interviews which increases efficiency of resources and may increase perceived value of the college. Based on preliminary feedback data, the new process has been well received and overall enjoyable by candidates as well as evaluators.

Improving the Multiple Mini-interview Process for a More Holistic Applicant Review. Seth D. Heldenbrand, *University of Arkansas for Medical Sciences*, Schwanda K. Flowers, *University of Arkansas for Medical Sciences*, Amy M. Franks, *University of Arkansas for Medical Sciences*, Kathryn K. Neill, *University of Arkansas for Medical Sciences*, T. Scott Warmack, *University of Arkansas for Medical Sciences*, Keith M. Olsen, *University of Arkansas for Medical Sciences*. **Background:** The multiple mini-interview (MMI) process is a novel tool that assists with a holistic admissions process. The MMI consists of multiple, short encounters in a case-based, focused scenarios or standard interview format. The intent is to evaluate applicants beyond standard cognitive evaluations (e.g. GPA, PCAT) and consider intangible and affective domain characteristics in admissions decisions. We have published MMI data from 2008-2012 that links performance in the didactic curriculum and unpublished data that demonstrate a positive correlation between MMI and performance in the Advanced Practice Pharmacy Experiences. Our four station MMI focused on communication, professionalism, ethical decision-making, empathy, knowledge of the pharmacy profession, and a standard interview. The literature suggests that the MMI should include a minimum of 7-10 cases to minimize bias and increase the number of soft skills assessments during the interview. **Intervention:** In 2015, the MMI was expanded to include seven cases. This enabled us to test three additional soft skills and apply a more holistic approach to the admissions process. Faculty and preceptors were surveyed to identify non-cognitive traits most valuable in future pharmacists. Survey results formed the process of developing new cases for our MMI. Added traits of critical thinking, conflict resolution, and collaboration/teamwork were added. Professionalism and knowledge of the profession continue to be evaluated in our MMI through traditional interviews. **Conclusion:** Incorporating additional soft skill cases into our MMI process positions us to meet and exceed ACPE Standards 2016. A more holistic applicant review will identify the most successful future pharmacist practitioners.

In-house Comprehensive Examination as an Indicator for Academic Success. Erica L. Rowe, *South College*, Jasmine M. Pittman, *South College*, Beverly S. Hamilton, *South College*. **Objective:** The Comprehensive Abilities Assessment (CAA) is a summative and formative assessment given near the end of the P1 year that contributes to the assessment of students' foundational knowledge required by the ACPE 2016 Standards. This study investigates the correlation between CAA performance and academic performance. **Methods:** The examination was prepared and administered using ExamSoft; a performance

benchmark of 66% was established using the Angoff method. The CAA was administered to 95 students in June 2015. The Fisher's Exact Test evaluated dichotomous variables. Pearson's correlation examined the association between specific variables of interest. Analysis was conducted with SPSS (IBM Corporation, Armonk, NY, Version 22). The a priori level of statistical significance was $\alpha < 0.05$. **Results:** The average score for the examination was 68%, and the test reliability was 0.82. Sixty-three students met the established performance benchmark of 66%, and 32 students did not. In comparison to those who met the benchmark, those who scored below the benchmark were significantly more likely to use a re-exam during their P2 year (11.1% vs. 37.5%, $p=0.005$) and to use a re-exam within the first two years (11.1% vs. 43.8%, $p=0.001$). **Conclusion:** The CAA performance was correlated with P2 year performance. Students who did not meet the established benchmark were more likely to use a re-exam in the P2 year. As more data is gathered in future CAA administrations that add to these results, the CAA could be considered an appropriate tool for identifying at-risk students who may benefit from remediation.

Innovating Interdisciplinary Education: Rutgers University Offers the First PharmD/MD Program in the U.S. Carol Goldin, *Rutgers, The State University of New Jersey*, Yan (Jane) Zhu, *Rutgers, The State University of New Jersey*, Shirin Poustchi, *Rutgers, The State University of New Jersey*, Qi Wang, *Rutgers, The State University of New Jersey*, Evelyn R. Hermes-DeSantis, *Rutgers, The State University of New Jersey*. In 2014 the Ernest Mario School of Pharmacy (EMSOP) and the Robert Wood Johnson Medical School (RWJMS) at Rutgers University collaboratively launched the first PharmD/MD program in the U.S. This unique and highly competitive dual degree option is designed to create an elite cadre of interdisciplinary practitioners, highly skilled in the disciplines of both pharmacy and medicine, and poised to take leadership roles in collaborative clinical practice and patient care, innovative healthcare delivery systems, academic research, healthcare policy, and the pharmaceutical industry. Students are formally admitted into medical school while in the P2 or P3 year in the pharmacy program; they complete the PharmD before matriculating into the MD program. Since the program's inception, the PharmD/MD candidates have had the opportunity to customize pharmacy practice experiential rotations, contribute to interdisciplinary healthcare programs, and focus on enhancing the skill set of the PharmD/MD degree. The program has already generated powerful interprofessional learning opportunities. In 2015, the inaugural cohort of three students completed the PharmD degree and matriculated into the MD program. Through evaluating the experiences of these students and interviewing faculty at both institutions, we have identified professionally important skill sets and distinctive career opportunities. As the second cohort enters medical school and the third cohort begins advanced pharmacy practice rotations, we continue to develop new interprofessional education and collaborative practice opportunities.

Integration of Academic Coaches to Improve First-Year PharmD Student Performance. Amanda S. Horn, *Idaho State University*, Vaughn L. Culbertson, *Idaho State University*. **Objective:** To develop, implement and assess effectiveness of academic coaching as an early-intervention strategy for improving student performance. **Methods:** Academic coaches were implemented in a first year student cohort. A validated instrument, the Learning and Study Strategies Inventory (LASSI) was administered to students with midterm grades of C- or lower. Students were asked to complete a LASSI, an intake form, and a goal worksheet prior to meeting with the coach. LASSI scores below the 50th national percentile were considered areas of weakness. Coaches focused on LASSI-identified areas for improvement and

worked with students to develop a personalized plan to improve academic success. Student perceptions were measured with a six question survey administered at the end of the semester. **Results:** Thirty-five students were identified in the Fall 2015 semester as having academic difficulties. Of these, 80% met with coaches and completed the LASSI survey. The highest percentage of student weaknesses identified were anxiety (71%), self-testing (71%), and test taking strategies (64%). Less student concerns were reported on intake forms in the non-working students. Students perceived the coaching program moderately successful (proportion of strongly agree and agree = 53.4%). Following spring 2016 semester grades, retention rates among the coaching cohort will be calculated and correlated with LASSI scores and student demographics. **Conclusion:** The use of academic coaches has assisted the College of Pharmacy in meeting ACPE standards for early identification and remediation of underperforming students. Overall, student perceptions of benefit were modestly positive; however, additional research is necessary to determine long-term success.

Interim Analysis of Academic Criteria for a New Early Assurance Program in a School of Pharmacy. Mark S. Luer, *Southern Illinois University Edwardsville*, Connie Stamper-Carr, *Southern Illinois University Edwardsville*, Dana Dain, *Southern Illinois University Edwardsville*, Erin M. Behnen, *Southern Illinois University Edwardsville*, Gireesh V. Gupchup, *Southern Illinois University Edwardsville*. **Objective:** To determine if academic criteria developed for an early assurance program can identify students who are successful in the pharmacy program. **Methods:** A retrospective evaluation of admission and academic records was conducted on all students admitted to the school of pharmacy in fall 2015. The evaluation included individuals admitted through the early assurance program and the traditional admission pathways. Data evaluated included admission pre-professional GPAs (cumulative, pre-pharmacy, pre-pharmacy math & science), PCAT composite scores, and fall first professional year grade point averages (Fall P1-GPA). Data were collected on the first cohort of early assurance program (EAP) students to matriculate into the school of pharmacy and these data were compared to students admitted through the traditional admission pathway. **Results:** Records from 81 students were included. Thirteen students in the EAP ($ACT \geq 27$ and pre-professional GPAs ≥ 3.5) were compared as a cohort to all other students in the data set ($N=68$). The EAP cohort had a significantly higher average composite PCAT (75.2 ± 17.2 vs 61.5 ± 16.5) and a significantly higher average P1-GPA (3.30 ± 0.32 vs 3.09 ± 0.46), $p \leq 0.05$. These data were consistent with estimated figures established prior to implementation of the EAP. **Discussion:** A combination of academic criterion ($ACT \geq 27$ and $GPA \geq 3.5$) appears to identify which students will be successful academically in the school of pharmacy. This combination not only identifies students who subsequently perform higher on the PCAT but also in the professional program.

Interventions for promoting continued student success at Regis University School of Pharmacy. Robert Haight, *Regis University*, Shannon Knutsen, *Regis University*, Daniel J. Berlau, *Regis University*, Rebecca D. Moote, *Regis University*. **Objective:** To describe the strategies that the Regis University School of Pharmacy (RUSOP) utilizes to promote continued student academic success. **Methods:** RUSOP has implemented several interventions to ensure student success during the didactic years. During orientation, students are given information related to Team-Based Learning (TBL) study skills, meta-cognition, and resources such as peer tutoring and ExamSoft strengths and opportunity reports. School interventions and policies are developed with the input and feedback from students. Throughout each semester, students who are identified as academically at-risk are

placed on Academic Jeopardy, a structured process designed to utilize specific interventions to assist the student in performing better. Also, the first two integrated pharmacotherapy courses have additional assessments to provide more opportunities for students to be assessed and receive feedback on their performance. In addition, due to the nature of TBL, students receive daily feedback on their academic performance. **Student Outcomes:** The introduction of academic success techniques during orientation has provided students with useful skills designed for their success in the program. The academic jeopardy policy has been successful in the early identification of potential student failure and has been used successfully. **Implications:** RUSOP is consistently assessing the impact and usefulness of all interventions designed for the promotion of student success in the PharmD program. These interventions are predicted to help students develop strategies to ensure their success in the program.

Mentoring from Start to Finish: A Proactive Approach to Support Academic Progression. Robin Parker, *Lipscomb University*, Jeff Lee, *Lipscomb University*, Benjamin N. Gross, *Lipscomb University*, Thomas M. Campbell, *Lipscomb University*, Roger L. Davis, *Lipscomb University*. Lipscomb University College of Pharmacy is a private, faith-based institution located in Nashville, Tennessee. Since opening its doors in 2007, the College has been dedicated to the success of its student population. One strategy employed by the College is to leverage mentee/mentor relationships as a mechanism to identify and support students experiencing academic challenges. This process starts during the first year of the pharmacy curriculum, when students are assigned a faculty mentor who meets with the student, formally and informally, several times throughout the semester. Mentors are apprised of student performance on an ongoing basis via exam block reviews. Faculty meet after each examination period throughout the semester and identify students who may be struggling in certain areas of coursework. This meeting provides insight into mentee academic performance, and supports an honest discussion regarding student motivation and academic capabilities. Mentors are also responsible for reviewing the annual Pharmacy Curriculum Outcomes Assessment (PCOA) results with their mentees to highlight individual strengths and weaknesses. It is through these various moments of contact between the mentor and mentee that mentors connect with students on a personal level. They are often able to identify career interests, which allows faculty mentors to provide curricular guidance towards specific professional goals. We believe the support system Lipscomb University College of Pharmacy utilizes allows for honest and open communication between student pharmacists and faculty. Ultimately, we have found that this process empowers each student to strive for academic excellence supported by ongoing guidance from a future colleague.

Multi-faceted Approach to Remediate Academically Underperforming Students Towards Competence and Graduation. Donald A. Godwin, *The University of New Mexico*, Krystal McCutchen, *The University of New Mexico*. The University of New Mexico College of Pharmacy boasts an almost 10-year history of innovative strategies to identify and remediate underperforming students to enhance progression/graduation rates and achieve professional competency. These programs involve a close working relationship between the Associate Dean for Education, Office of Curriculum, and the Office of Student Service and include: 1. Monitoring all students' academic performance and flagging poor performing students by the Office of Curriculum. 2. Individual meetings between poor performing students and Executive Associate Dean. 3. Creation of an Academic Improvement Plan consisting of academic (peer tutoring and faculty mentoring) and/or non-academic (financial aid, learning strategy workshops and/or

health/wellness workshops arranged by Office of Student Services) approaches to address all issues affecting performance. 4. Overall course and student performance analysis by Office of Curriculum. Data (mean and standard deviation as well as possible grade cut points) provided to faculty before final grades are determined. 5. After semester Proficiency Exams for students in courses with grades less than C- (provided the students complied with the conditions of the Academic Improvement Plan). 6. One year Remediation Program to allow students to repeat course(s) that have grades less than C- and address other academic deficiencies as determined by the College's Student Affairs Committee. a. Students can progress with one grade less than C- b. Remediation Program is triggered by second "D" or first "F" This remediation program has proven very effective with 4-year graduation rates improving from 74% (2000-2006) to 92% (2007-2015).

Multiple Approaches to Improve Pharmacy Calculations Outcome. George K. Yeboah, *Harding University*, Gretchen Smith, Hope Stanger, Kenneth Yates, *Harding University*. A slight deviation in medication dosing may potentially lead to adverse patient outcomes. Students admitted to the professional Doctor of Pharmacy program have completed pre-requisite mathematical training. However, pharmaceutical calculation involves more than knowledge of basic mathematics. The ability to apply mathematical principles in the context of interpretation of prescriptions for patient-specific needs is critical to accurately calculate doses and materials for dispensing and compounding drug products. Thus improvement of students' calculations outcomes must involve multiple approaches from both pharmaceutical and clinical sciences. The purpose of college's approach, therefore, was to develop a continuous calculations training and assessment throughout the Doctor of Pharmacy curriculum to ensure students are adequately prepared for practice. **Methods:** Review of basic calculation principles begins one month before students matriculate into the first professional year; calculations laboratories on prescription interpretation occurs two hours each week during the first semester; calculations laboratories with assessment on patient profile and drug preparation-based compounding interpretation occurs for 3 hours a week during the second semester followed by continuous calculations training and assessment in selected core courses throughout the remainder of didactic curriculum; a remediation course with a set of "Explain Everything" videos and exercises is accessible to all students through the summer following graduation. Results: There is a marked improvement in outcomes as demonstrated by a more than two-fold increase in the passing rate on calculations and prescription interpretation examinations. Scaled score on Area 2 of NAPLEX has increased from 11.6 to 12.3 within two years

Office of Academic and Student Affairs: A Commitment to Success. Amy Wilson, *Creighton University*, J. Chris Bradberry, *Creighton University*. The mission of the Creighton University School of Pharmacy and Health Professions' Office of Academic and Student Affairs is to ensure the highest academic standards within programs of the School, and to provide leadership, services, and opportunities that enable students to succeed in and contribute to a diverse and global society as caring, ethical, and knowledgeable healthcare professionals. The office is led by a team of professionals committed to the student experience, which includes academic support and professional leadership development programs that help all students, both campus and distance, advance from "good to great". A primary focus is to provide academic support systems to increase student retention and encourage excellence in a student's educational progress. A thoughtful, intentional approach to student success is fostered through the Academic Success program. Guided by

two full-time Academic Success Consultants, students are offered a comprehensive support network of tutoring, academic success seminars, elective coursework, academic advising, and individualized academic counseling and coaching to assist students in achieving their goals. In addition, faculty partnerships with the Academic Success program allow for early identification and intervention of struggling students. A formalized "early alert" process allows faculty to refer a struggling student for personal outreach from an Academic Success Consultant. Student outcomes, including progression and retention data, are tracked to measure program success. Through its commitment to a supportive and professional learning environment, the Office of Academic and Student Affairs has a positive impact on remediation, retention and professional development for our students.

Para-curricular Program to Improve Academic Skills for ESL Students in a Team-based Learning Curriculum. Melissa Beck, *Cedarville University*, Kate Ford, *Cedarville University*, Rebecca J. Gryka, *Cedarville University*, Douglas C. Anderson, Jr., *Cedarville University*, Marc A. Sweeney, *Cedarville University*, Aleda M. Chen, *Cedarville University*. While many research studies have assessed what pre-admission factors contribute to success in pharmacy school, there is less known about how to improve student success once in school. Given the more active pedagogies utilized in curricula such as team-based learning or flipped classrooms, students must read, identify, and learn important content from large pre-class assignments daily. This can create academic challenges for students with inadequate study skills or for whom English is not their first language. We have identified these challenges among our students, which leads to remediation of the content. In order to identify and assist students in progressing academically and achieving their potential, we have and are in the process of implementing several strategies. First, we have created key partnerships with The Cove (our campus center for academic support services) and the English, Literature, and Modern Languages (ELML) Department to create courses for students who are at risk of not progressing. The Cove now offers a professional program-level course that covers appropriate study skills, time management, reading strategies, and more. The ELML department is working on an ESL course that can be taken the summer before the first professional year to prepare students for graduate-level English skills. We also are working with these groups on assessments or measures that would identify students, at the point of admission, who may struggle with success so we can enroll them in support courses early. We are currently assessing the impact of these programs on remediation.

Path to Success: Development of the Pharmacist Through the Continuum of Pharmacy School and Beyond. Deirdre P. Pierce, *St. John Fisher College*, Kathryn A. Connor, *St. John Fisher College*, Nabila Ahmed-Sarwar, *St. John Fisher College*, Keith DelMonte, *St. John Fisher College*, David J. McCaffrey, III, *St. John Fisher College*, Angela K. Nagel, *St. John Fisher College*, Melinda Lull, *St. John Fisher College*, Jennifer L. Mathews, *St. John Fisher College*, Anne Schweighardt, *St. John Fisher College*, Judianne Slissh, *St. John Fisher College*, Elizabeth Sutton Burke, *St. John Fisher College*, Melanie Symoniak, *St. John Fisher College*, Matthew Zak, *St. John Fisher College*, Christine R. Birnie, *St. John Fisher College*, Jack Brown, *St. John Fisher College*. **Objective:** To explore the processes and opportunities provided in the co-curriculum of the Wegmans School of Pharmacy (WSOP) that contribute to the development of successful pharmacy graduates. **Methods:** Pharmacy career preparation begins at orientation with workshops on emotional intelligence, leadership, and

the APhA Career Pathway Evaluation Program. During the P1 through P4 years, the optional Student Development Workshop Series (SDW) offers seminars for students on a variety of topics including time management, exam taking strategies/anxiety management, learning styles, personal “brand” creation, CV/portfolio development, and interview soft skills. All students may participate in the annual WSoP Career Day, which offers networking and career opportunities, including post-graduate training options. During the P4 year, there is opportunity for a structured Residency/Fellowship Preparation Program (RPP). Additionally, local pharmacy residents/fellows participate in a Residency Teaching/Learning Curriculum Program (TLC) to develop academic teaching and precepting skills. **Results:** The SDW program has been successful and well attended with greater than 90% of students finding the topics relevant to their post-graduate success. After the RPP, ASHP residency match results in the 2016 class yielded an improvement from previous years, with 76 % of applied students and 94% of ranked students matching programs in Phase 1. Of the TLC participants, 90% documented an improvement in multiple types of teaching skills. **Implications:** Based on data and student/faculty input, career development is reassessed and improved continuously at WSoP. In the near future, a method for tracking graduates will be designed to further monitor the impact of programs on student success.

Pharmacy Professional Education and Recruitment at Concordia University School of Pharmacy. Dean L. Arneson, *Concordia University Wisconsin*, Nicia Lemoine, *Concordia University Wisconsin*, Frances Grant, *Grafton High School, Grafton Wisconsin*. The Concordia University School of pharmacy has been working with several organizations in the state of Wisconsin to promote the profession of pharmacy to high school students. The collaboration includes three different activities. The first is hosting Native American high school students from northern Wisconsin Tribes. The Native students spend two days on campus one day learning about pharmacy and the second day about the other health care programs that Concordia offers. The second program works with the Lakeshore Area Health Careers Summer Camp which enrolls high school students from south east Wisconsin to visit health care organizations (hospitals, clinics, education programs, etc.). Concordia is the only university that they visit to learn about the pharmacy profession as well as several other health care education programs offered on campus. The third program is a collaboration with Grafton High School science program entitled Project Lead the Way (PLTW). Project Lead the Way engages students through science, technology, engineering, and math (STEM) education. The faculty from Concordia’s school of pharmacy participate in the Grafton High School Biomedical Science offerings of the PLTW program. It is a four year program with each year focusing on a different area; Principles of Biomedical Science, Human body Systems, Medical Interventions and a capstone course of Biomedical Innovations. This day long, “hands-on” conference allows for students to be immersed in a variety of health care programs offered at Concordia University. All three programs demonstrate CUW’s proactive efforts to encourage students interested in STEM.

Pharming for the Future: Successful Pipeline Development Requires Recruitment, Retention and Reinvestment. William M. Moore, *Campbell University*, Brenda F. Blackman, *Campbell University*, Kimberly J. Dunn, *Campbell University*, Michael A. Gallagher, *Campbell University*, William J. Taylor, *Campbell University*, Kimberly A. Whitted, *Campbell University*, Michael L. Adams, *Campbell University*. The College of Pharmacy & Health Sciences (CPHS) has purposefully reinvested resources into the development and enhancement of a pipeline for the health professions and specifically for

pharmacy. The profession faces many challenges, but a notable challenge is the perception of the pharmacist being limited to the single role of a community pharmacist in a retail setting. This perception is coupled by the lack of understanding of the importance of this role and the potential impact it has on patient lives, the economy and personal reward. Pharmacy schools must learn to engage all pre-health professions students and shed light on the vast array of opportunities that pharmacist have as health care team members. Campbell has utilized personal relationship building as the foundation of its recruitment strategy since its inception. This foundation has served a key tenet for the development of its multiple strategy approach which includes individualized academic counseling, “advise the advisors” sessions, virtual pathways, multi-strategy digital marketing, onsite summer programs, etc. CPHS utilizes its recruitment programming from middle school through college to highlight pharmacy and the numerous for pharmacists to serve. A concerted effort has been made to develop methods to track, assess and analyze mechanisms employed in the recruitment process. There is not one size fits all approach and the work is difficult, dynamic and well worth the investment of time, money and energy.

Pilot Analysis of Using “Job-Fit” Testing as a Component of the Applicant Pre-screening Process. Helen C. Park, *Roseman University of Health Sciences*, Arup Chakraborty, *Roseman University of Health Sciences*, Erik Jorvig, *Roseman University of Health Sciences*. **Objective:** Many pharmacy schools are considering a more holistic approach in the admissions process to identify applicants who will be successful. Pharmacy schools look for specific abilities, skills and traits in their applicants. The objective of the study is to assess and determine the reliability of “job-fit” testing as a predictor of success in the P1 year. **Methods:** Interviewees for admission into the College of Pharmacy were asked to take an online, pre-screening assessment. The pre-screening assessment is a “job-fit” test for which the comparison benchmark is established by analyzing question responses provided by prior successful pharmacy students. Using this test, applicant scores in numeric, verbal and spatial reasoning were analyzed for their predictive abilities by comparison to the established benchmark. Success for this study was defined by a student’s academic performance in the P1 year. **Results:** Results of the analysis of “job-fit” test predictive ability were mixed. The test showed a statistically significant correlation to markers for academic withdrawal. However, the model showed no correlation with several measures of student academic success. **Implications:** The results imply that this specific “job-fit” test model solely provides a negative insight into successful completion of the first year by students, since correlation was only with measures of withdrawal. However, for students completing the year, the model has difficulty distinguishing gradations of success within the program. Further analysis of the circumstances of the development and implementation of the “job fit” model revealed several potential confounders which may have contributed to these results.

Pipeline to Practice: Northeast Ohio Medical University’s Multi-pronged Approach to Recruitment. Dale E. English, *Northeast Ohio Medical University*, Gina Z. Weisblat, *Northeast Ohio Medical University*, Erik J. Porfeli, *Northeast Ohio Medical University*, James Barrett, *Northeast Ohio Medical University*, Charles T. Taylor, *Northeast Ohio Medical University*. Personal engagement is a foundational component of the recruitment strategies enacted by the College of Pharmacy at Northeast Ohio Medical University (NEOMED). NEOMED is located in a small rural community, which is less than 40 minutes from the metropolitan areas of Cleveland, Akron, Youngstown, and Canton. This region offers a uniquely diverse regional

population of rural, suburban, and urban cultures to engage and serve. Being a medical university, the Colleges of Pharmacy and Medicine employ an interprofessional approach from pipeline to practice to recruit and train our students. Enrichment and pipeline programs, such as our Health Professions Affinity Communities (HPAC) and Pathways to Pharmacy are dynamic interprofessional programs that support high school students in diverse, medically underserved, and underrepresented communities across Ohio. These programs now serve over 2,000 Ohio students and support them to explore health care careers, such as pharmacy, design and enact community health projects serving over 10,000 Ohioans, and encourage them to pursue health professions degrees and careers in local Ohio communities. These programs are synergistic to a growing network of local colleges and universities that collaborate with NEOMED to identify and prepare students to enter our PharmD and MD programs. Together, our pipeline programs and partners are establishing a regional interprofessional Ohio Alliance to advance youth into pharmacy careers serving local medically-underserved communities. This poster provides a snapshot of the multi-pronged approach and initiatives of our university to secure a robust and diverse student body to advance the mission of our College of Pharmacy and university.

Plussing the Interview Day with an Authentic Team-Based Learning Experience at a College of Pharmacy. Jason A. McDowell, Jr., *California Northstate University*, Parto S. Khansari, *California Northstate University*, Gail Kubat, *California Northstate University*, Tiffanie Ho, *California Northstate University*, Cyndi Porter, *California Northstate University*, Rita M. Alajajian, *California Northstate University*, Haoshu Yang, *California Northstate University*, Tiffany-Jade M. Kreys, *California Northstate University*, John K. Cusick, *California North State University*, Charles T. Doan, *California Northstate University* Andy Nauli, *California Northstate University*, Karen Hassell, *California Northstate University*, Suzanne Clark, *California Northstate University*, Hieu T. Tran, *California Northstate University*. An important part of the recruitment and admissions process is the interview day, as it can be a worthwhile experience for both the school and applicant. The interview day is designed to satisfy two primary objectives: 1) Highlight the unique strengths of an individual pharmacy program to allow the applicant to make an informed decision about the school. 2) Carefully screen and select strong applicants for the pharmacy program. These two goals must be balanced to allow the school and applicant to make thoughtful, informed decisions. California Northstate University College of Pharmacy (CNUCOP) has developed a signature approach to the interview day, providing a comprehensive, realistic experience for applicants using techniques built upon Disney's "plussing" principles. The interview day at CNUCOP is supplemented with a hands-on Team-Based Learning (TBL) experience and ample time to interact with students, administrators, faculty, and staff. These components provide applicants a brief, but rich, exposure to the CNUCOP experience and TBL culture. The concurrent screening is accomplished through an on-site critical thinking essay and two rubric-driven multiple mini interviews using questions designed to assess communication, time management, and metacognitive skills. Scores are entered into WebAdMIT and compared with pre-interview rubric results. This approach reflects the CNUCOP educational experience and TBL culture: faculty and staff can assess an applicant's likelihood of academic success and suitability for a TBL-centered community, while applicants can form realistic expectations of the CNUCOP environment. Thus, the plussed interview day allows both CNUCOP and applicants to make optimal decisions.

Pre-Pharmacy Student Retention Strategies. Renee M. DeHart, *Samford University*, Michael G. Kendrach, *Samford University*. **Background:** Attracting and retaining pre-pharmacy students (PPS) has been important to the Samford University (SU) McWhorter School of Pharmacy (MSOP) for many years. The MSOP is a 2+4 program with 20-40% of pharmacy students completing their pre-pharmacy courses at SU. **Methods:** The MSOP began the Early-Assurance-Program (EAP) in Fall 2015. The MSOP also has recently added opportunities for PPS to learn about pharmacy and interact with MSOP faculty starting with their freshman fall semester. Freshman students are encouraged to take SU's FOUNDATIONS course during the Fall (F-FOUN), which assists them in adjusting to college life. Two F-FOUN sections are taught by MSOP faculty and also offer insights into pharmacy school. In addition, a special topics FOUNDATIONS in Pharmacy (S-FOUN) course (started Spring 2013) is taught by MSOP faculty. Survey data were collected from S-FOUN students. **Results:** A total of 58 students were PPS during Fall 2015 and 81% are still PPS during Spring 2016. Many of the 58 PPS (65.5%) were in the EAP and 87% are still PPS. Over 50% of the PPS cohort completed the F-FOUN (60.4%) and enrolled in the S-FOUN (53.2%) course. After completing S-FOUN, mean survey results indicate a strong desire to be a pharmacist and attend MSOP (8.8 and 9.4, respectively on 0-10 scale). **Conclusion:** The pre-pharmacy program at SU is taught essentially by non-MSOP faculty. Having MSOP faculty teaching PPS in SU FOUN courses with a primary pharmacy focus is assisting with PPS retention.

Predictors of Success and Struggle: GPA, PCAT, and a Novel Composite as a "Diagnostic Test". Dayne A. Laskey, *University of Saint Joseph*, Christine G. Kohn, *University of Saint Joseph*, F. Bahar Matusik, *University of Saint Joseph*, James G. Henkel, *University of Saint Joseph*, Joseph R. Ofosu, *University of Saint Joseph*, Doreen E. Szollosi. **Introduction:** Current challenges in admissions recruitment combined with the necessity to increase diversity in our post-baccalaureate candidate pool drives method-development for predicting student success in our curriculum. GPA and PCAT scores are among factors evaluated for pharmacy school candidates. We evaluated GPA, PCAT, and a novel composite score (GPAXPCAT) as predictors of success in our curriculum. **Methods:** Students in our curriculum have three opportunities to pass an assessment with an 84% or better. Achieving $\geq 94\%$ on the first attempt results in an Honors (H) grade. For this analysis, entry pharmacy GPA and PCAT scores from the classes of 2014-2016 (n=230) were compared with Honors grades, reassessments, and remediations. Additionally, the composite GPAXPCAT cut-off value to evaluate the likelihood of remediation was determined by generating and evaluating a receiver-operator characteristic curve (ROC). Based upon this cut-off value, students were assigned to a 'success' or 'struggle' category. **Results:** Preliminary data shows incoming students with higher GPAs earn more H grades in the program and reassess less often. No statistical difference was found between individuals with low GPA/high PCAT vs high GPA/low PCAT with respect to H grades or reassessments. Approximately 49.6% (n=114) required remediation at least once throughout their P1-P2 years. After ROC analysis (AUC 0.603, 95% CI 0.529-0.677), a GPAXPCAT score $< 2,000$ was found to be 12% sensitive and 91% specific for predicting remediation, while GPAXPCAT $< 5,000$ had a sensitivity/specificity of 80%/69%. **Conclusions:** It appears that GPA, PCAT, and GPAXPCAT are potential useful indicators of student success, as defined by remediation requirements.

Promoting Pharmacy through Recruitment for Two Campuses in Two States. Katie E. Cardone, *Albany College of Pharmacy and Health Sciences*, Hai-An Zheng, *Albany College of Pharmacy and Health Sciences*, Nicholas Balk, *Albany College of Pharmacy and Health Sciences*, Caleb R. Grant, *Albany College of Pharmacy and Health Sciences*, Kevin Rivenburg, *Albany College of Pharmacy and Health Sciences*, Robert DiCenzo, *Albany College of Pharmacy and Health Sciences*. As one of the oldest and largest pharmacy schools in the country, with over 80% of the College's student body enrolled in the pre-pharmacy or pharmacy curriculum, Albany College of Pharmacy and Health Sciences (ACPHS) has unique opportunities to promote the pharmacy profession through recruitment. The Office of Admissions recruits students at all educational levels across two campuses located in two states, from high school students entering our Early Assurance program through professional entry students attending colleges and universities world-wide, providing ACPHS with a deep and broad reach into the educational and healthcare communities. Highlights of ACPHS' more innovative efforts include "ACPHS Academy," which brings pharmacy students into the classrooms of local elementary/middle schools to provide science-based programming to 100 local students who qualify for free lunch and offers bi-weekly, 90-minute tutorials that culminate in a year-end science fair on campus. The College also offers enrichment opportunities to highlight ACPHS programs and health science professions. An example includes hosting career cluster days for the YMCA Black and Latino Achievers, where over 50 local high school students from underrepresented groups spend the day at ACPHS, delving into career exploration and development programs. ACPHS also opens the Pharmacy Skills Labs multiple times per year, from compounding toothpaste to calamine lotion, to offer programs for career preparation organizations including local and out-of-state TRiO/Upward Bound, MedQuest, and New Visions programs. In summary, these are a few examples of how ACPHS takes advantage of its unique recruitment efforts to promote the pharmacy profession.

Prospero – Prepharmacy Pathway for California's Central Valley. Wendy Duncan, *California Health Sciences University*, Midori Kondo, *California Health Sciences University*, Richele C. Kleiser. Like many highly rural areas, California's central valley has difficulty recruiting and retaining healthcare providers and the mission of California Health Sciences University aims to ameliorate this situation. Because health professionals who grew up in underserved communities are among the most likely to choose to practice there, a focus on recruiting pharmacy students from these areas is a robust strategy for mitigating this source of healthcare inequity. However the most underserved populations are among the least able to afford the many years of higher education required, and less likely to complete degree programs if they do enroll. Clovis Unified School District, Clovis Community College, Fresno State University and California Health Sciences University joined forces to implement a creative solution to this affordability issue: a "4+2+2+4" pipeline founded on the Linked Learning Pathways to Baccalaureate concept. The program aims to ensure that students have a clear, articulated pathway from 9th grade onward with advising, tutoring, counseling, academic skills development, career guidance and academic support that will maximize the likelihood of successful matriculation into and through our Pharm.D. program. In addition, the curriculum is sufficiently rigorous throughout the pipeline to ensure that students are adequately prepared for each transition. Affordability is enhanced both through institutional choice (community college is much less expensive than most 4 year institutions), academic support (which facilitates academic success and on time graduation), and attainment of a relatively lucrative healthcare career (which facilitates loan repayment).

Recruiting Allies – Kids, Colleges and Communities Helping Win the Battle for the Best Pharmacy Applicants. Richard N. Dalby, *University of Maryland*, Cherokee Layson-Wolf, *University of Maryland*, Lisa Lebovitz, *University of Maryland*, Shannon R. Tucker, *University of Maryland*. Pharmacy competes for applicants against medicine, dentistry and other STEM-oriented careers. Leveraging community and institutional relationships provides an opportunity to capture the imagination of students and their parents in K-12 and at undergraduate programs thereby expanding the pool of prospective applicants and generating excitement about careers in pharmacy. Community engagement, research partnerships, and faculty collaboration all drive recruitment and build a positive impression of pharmacy and the rewarding and lucrative career opportunities it offers. Here's how we do it. Diabetic Halloween educates Baltimore City elementary school kids and their parents. Math and science skills are augmented through tutoring in A Bridge to Academic Excellence (ABAE) offered to middle and high school students. Drug abuse awareness programs reach high school students. Undergraduate research internships (for example Meyerhoff Scholars) and instructional collaborations (for example, enrichment of a prerequisite physics course at a community college with concepts relevant to pharmacy) build symbiotic partnerships with feeder colleges and universities. Outcomes research honed with community input provides a tool to reach underserved and non-traditional students previously unaware of pharmacy. To assess the success of these organic and strategic engagement efforts on long-term recruitment and application rates requires rethinking admissions questions to capture more information on how prospective students learned about pharmacy. Utilizing established customer relationship management metrics to learn how prospects form impressions of the pharmacy profession can guide future engagement efforts, although the results may not yield results for 5-10 years.

Recruiting Houston PharmD Students: Two Pre-College Pipeline Programs. Elizabeth P. Pitman, *University of Houston*, Santhi Masilamani, *University of Houston*. Increasing the interest in the pharmacy profession is imperative for the profession's future. The University of Houston College of Pharmacy (UHCOP) has utilized two unique pre-college pipeline building programs over the past years: a pharmacy summer camp program geared toward junior and senior high school students and a nine week pharmacy course taught to middle school students by college faculty. The week long UHCOP pharmacy professional experience summer camp began in 2013. On average there are 20-25 campers each year. The camp is coordinated by current PharmD student counselors. Camp activities include compounding, learning about the profession of pharmacy, speaking with current PharmD students about making a good transition to college, a career roundtable with UHCOP faculty and practicing pharmacists, two shadowing experiences at Texas Medical Center Institutions, and a Crime Scene Investigator (CSI) themed group activity where campers learned about medications and disease states. The middle school 9 week mini course was piloted in the 2015-16 school year to gifted and talented students in a CSI format. Students solved two medication related deaths by learning about medication adherence, Top 10 medications and Top 10 diseases. These middle school students started with very little interest in health care and ended with them requesting medication adherence science fair projects and considering health care professions.

Recruiting Students for the Evolution in Pharmacy. Cherelyn Espina, *University of Washington*, Nanci L. Murphy, *University of Washington*, Donald F. Downing, *University of Washington*, Michaelene Kedzierski, *University of Washington*, Peggy S. Odegard, *University of Washington*. The UW School of Pharmacy

strives to foster our students' ability to transform health care and the health of our communities through innovations in practice, policy and research. A goal of our recruitment program is to engage prospective students in high school and bring awareness to diverse populations about this new era of health care and advancing roles for pharmacists. Our recruitment efforts are aimed at expanding prospective student awareness about the emerging roles of pharmacists and engaging students, who, as our strategic plan states, "seek to develop and excel, as leaders, collaborators and providers of patient-centered care." We will describe our expanded recruitment program that creates interest in the profession, provides active experiences to help prospective students fully appreciate the changing roles for pharmacists, and involves students and alumni in the recruitment process to provide a real-world understanding of progressive pharmacy education. Our recruitment efforts are organized into four major areas: outreach to fairs and events; electronic recruiting; new media and publications promotion of the UWSOP and the profession; and local engagement in open houses and information sessions. Several specific projects, developed to target these areas and engage interest from students include; National Student Leadership Conference in Medicine and Healthcare, Co-recruitment efforts with other health professions schools and interprofessional education, Pharmacy 301: Medications and Health, an undergraduate course about medications and self-care, Mr. Peabody's Medicine Cabinet - an engaging learning activity used to simulate and foster dialogue about key pharmacist responsibilities.

Recruiting Students into an Assessment Culture: Faculty and Student Views on Pharmacy Assessment Strategies. Annesha White, *University of North Texas System*, William C. Lubawy, *University of Kentucky*, Tina K. Machu, *University of North Texas System*, Russell Coyle, Donna L. Coyle, *University of North Texas System*, Eliot M. Slovin, *University of North Texas System*, Shara Elrod, *University of North Texas System*, Carol A. Kominski. **Objective:** Assessment has become a major aspect of accreditation in higher education, but little research is conducted on perception of a "culture of assessment." The objectives of this study were to: (1) explore attitudes that characterize assessment and (2) examine views on assessment strategies. **Methods:** All faculty, staff and students attending a self-study retreat were invited to participate in a 24 item survey. The survey consisted of open ended questions and utilized a Likert scale (1=strongly disagree, 4=strongly agree). Analysis included SPSS 22.0 descriptive statistics and the study was approved by the University's Institutional Review Board. **Results:** Twenty-two respondents completed the survey (80% response rate). Most respondents were Assistant Professors (50%) and Tenure Track (57%). The majority agreed/strongly agreed that goals and outcomes have been appropriately mapped to the curriculum (100%, mean 3.4) and assessment feedback spurs student growth and learning (92%, mean 3.5). Respondents indicated they have participated in developing the assessment program (93%, mean 3.2) and they are clear that assessment is not going away (100%, mean 3.5). There is interest in revealing failed assessment strategies (100%, mean 3.4) and acknowledging/appreciating assessment participation (93%, mean 3.7). Approximately half of respondents were interested in using mobile applications, dashboards or iPads to complete assessment tasks or to receive information (50%, mean 3.0). **Implications:** When asked what word comes to mind when you think of "Assessment," most responded "accountability or improvement". This study provides an innovative 'culture of assessment' survey supporting the recruitment of students into an assessment driven environment.

Recruiting Students via a Strategic Alliance: The DePaul University – Rosalind Franklin University Pathways Honors Program.

Marc S. Abel, *Rosalind Franklin University of Medicine and Science*, Lauren B. Angelo, *Rosalind Franklin University of Medicine and Science*, Phillip E. Funk, *DePaul University*, Patrick Knott, *Rosalind Franklin University of Medicine and Science*, Jolee Rosenkranz, *Rosalind Franklin University of Medicine and Science*, Kevin O. Rynn, *Rosalind Franklin University of Medicine and Science*, D. Eric Walters, *Rosalind Franklin University of Medicine and Science*. Rosalind Franklin University of Medicine and Science (RFU) and DePaul University established the Alliance for Health Sciences and Pathways Honors Program to provide accelerated degree options for students. This leverages DePaul's strong undergraduate program with selected RFU degree programs in a comprehensive approach to interprofessional health sciences education. Curricular pathways for students include pharmacy, medicine, podiatric medicine, physician assistant, physical therapy, and pathologists' assistant studies. Faculty from both universities designed collaborative curricula emphasizing interprofessional education and applied experiences, beginning in the freshman year. Additionally, DePaul students are paired with faculty mentors from RFU. This program is intentionally flexible; the students are not required to declare an interest early but encouraged to explore a variety of options. The program streamlines qualified students' progress as undergraduates at DePaul into highly competitive masters and doctoral programs at RFU. Outcomes: The Pathways Honors Program is the fastest growing segment of DePaul University. Interest in a health care career was expressed by cohorts of DePaul students who enrolled in the program in Fall 2013 (59 students), Fall 2014 (64 students), and Fall 2015 (85 students). Five students from the first cohort applied to RFU in 2013, were accepted, and will matriculate in Fall 2016, including one to the PharmD program. By entering the pharmacy pathway, students earn a Bachelor of Science degree at the end of the first year at RFU, and both their baccalaureate and PharmD degrees in seven years. This accelerated program is designed to facilitate ease of entry into the pharmacy profession.

Recruitment and Admissions Strategies Aimed at Enhancing Retention.

Donna G. Beall, *The University of Montana*, Sherrill J. Brown, *The University of Montana*, Howard D. Beall, *The University of Montana*, Wilena Old Person, *The University of Montana*. Because student success is a fundamental goal of our pharmacy program, strategies to enhance retention begin during the recruitment and admissions process. One strategy is the Pathway to Pharm D Program (P2PD). This 4-week pre-matriculation program is offered through the Native American Center of Excellence at the University of Montana Skaggs School of Pharmacy. P2PD is a unique educational opportunity for American Indian/Alaska Native and Underrepresented Minority students who have been admitted into a professional pharmacy program for the upcoming academic year. P2PD is designed to academically prepare students for the first year of a professional pharmacy program and is especially helpful to students who are not accustomed to an intensive academic program since it provides a preview of the pharmacy school environment and curriculum. Another strategy is the proactive identification of potential academic issues when the Admissions Committee reviews applications. The committee enhances retention by requiring meetings between identified students and the Director of Student Services. Additionally, review of first exam scores by the Director of Student Services for satisfactory progress identifies students requiring tutoring, test preparation, or life coaching assistance. This year, peer mentoring of incoming P1 students with upperclassman was implemented to improve retention and success in the program. During orientation, 4 to 5 P1 students were assigned to a P3 student mentor.

During orientation, the groups did team building activities, reviewed policies, and completed a scavenger hunt throughout the building. The P3 mentor then served as a resource to the group during the academic year.

Remediation: A Survey of One Institution's Experience. Bradley E. Hein, *University of Cincinnati*, Andrea L. Wall, *University of Cincinnati*, Shauna M. Buring, *University of Cincinnati*. In Fall 2012, the James L. Winkle College of Pharmacy converted from a quarter-based curriculum to a semester curriculum. At the same time, the College adopted a 'D' grade. Previously, students could earn an A, B, C or F. Due to grade inflation among other factors, the 'D' grade was incorporated along with a remediation plan for students earning a D. The remediation plan requires all students earning a D to repeat part of or the entire course in the summer following the original course offering. Students register for the course and the grade earned does not replace the original; rather both grades remain on the student's transcript. Students must earn at least 70% in the remediation course to progress to the next year. The exact remediation process is left to the course coordinator to decide, however, generally involves student self-directed learning, faculty discussion and assessment. Student self-directed learning is generally accomplished by review of notes and listening to taped lectures from the original course. Students meet with course and module directors as well as faculty responsible for large blocks of material. Faculty then review material and answer questions during these meetings. Some faculty give graded assessments at this time. All remediation sessions finish with a cumulative exam. Fifty-seven students have remediated courses using this process with a 92% successful pass rate. The remediation process has evolved over the years to include more faculty meetings, more focused topic review assignments for students and more assessments.

Requirements for Progression and Threshold for Remediation in a Doctor of Pharmacy Curriculum. Katherine K. Orr, *The University of Rhode Island*, Anita N. Jackson, *The University of Rhode Island*. The purpose of this abstract is to describe policies related to remediation and progression, and provide examples of remediation plans designed to ensure students achieve competency. In 2012, the URI College of Pharmacy implemented a progression and retention policy requiring students earn a minimum cumulative quality point average (cQPA) of 2.30 in all required didactic professional courses in order to proceed into Advanced Pharmacy Practice Experiences (APPE) and to qualify for graduation. The minimally accepted grade in all required professional courses is a C- or demonstrated proficiency through remediation. A student who receives any grade of less than a C- in any required didactic pharmacy course or whose cQPA in professional courses falls between 2.20 and 2.30 at the end of any semester will be reviewed by the Scholastic Standing committee and presented with a remediation plan that must be successfully completed to progress in the curriculum. Remediation components have been designed by individual course faculty to meet competency standards and have included repeating courses, additional self-study and/or assessment of proficiency through assignments and examinations. Recommendations for remediation are developed by the Scholastic Standing committee taking into account the student's cQPA, length enrolled in the professional program, the number and types of deficiencies and trends in academic performance. Examples of remediation plan components will be presented with this poster, in addition to strengths and limitations of this approach. To evaluate student competency, the Scholastic Standing committee will also review Milestone assessment results and future Pharmacy Curriculum Outcomes Assessment.

Rescue, Remediation, and Retention: The 3 R's of Pharmacy Student Success. Michael M. Milks, *The University of Findlay*, Ryan A. Schneider, *The University of Findlay*, Bradley Shinn, *The University of Findlay*, Sandra B. Earle, *The University of Findlay*, Sharon Ternullo, *The University of Findlay*, Rahul S. Khupse, *The University of Findlay*, Lori Ernsthausen, *The University of Findlay*, Patrick M. Malone, *The University of Findlay*, Debra L. Parker, *The University of Findlay*. In 2014, the faculty of The University of Findlay College of Pharmacy empaneled an ad hoc College committee charged with the responsibility of identifying barriers to student success, and of exploring methods and policies that would contribute to the retention of qualified pharmacy students throughout the rigorous Pharm.D. curriculum. This newly formed College of Pharmacy Student Success Committee was composed of faculty representatives selected by the College's faculty committees, one faculty member elected at-large, and four student representatives, one from each of the second through fifth years of our six-year direct-entry program. Within a year the Committee brought to the faculty a recommendation that: 1.) reiterated the vital importance of identifying at-risk students early, and ensuring prompt academic (and sometimes personal) intervention without the stigma of being placed on official probation; 2.) proposed a policy that would enable students who were performing poorly to remediate midterm examinations by a modified re-examination process (to a maximum of a 75% improved test score); and 3.) empowered students who earned no more than two non-passing (C- or D+) grades in required pharmacy courses to repeat the course (s) during the subsequent summer semester by independent study under the supervision of the course faculty. While only some of the suggestions were adopted upon the initial proposal by the Committee, the College continues to refine and expand the student assistance programs and policies, closely monitoring the ongoing impact of such interventions.

Residency Information Program with Integrated Training (RIP-IT) at Ferris State University College of Pharmacy. Dean Van Loo, *Ferris State University*, Katie L. Axford, *Ferris State University*. As the number of candidates for residency positions continues to grow at a rate that far exceeds the number of available positions, preparation for the application process has become a high priority for pharmacy students interested in pursuing post-graduate training. In response to this demand, faculty at Ferris State University College of Pharmacy developed the Residency Information Program with Integrated Training (RIP-IT) to help students develop the skills necessary to stand out as competitive candidates for post-graduate training opportunities. The RIP-IT program features a series of didactic training sessions and facilitated mentoring activities with area pharmacy residents. The sessions take place throughout the Fall semester, culminating in the ASHP Midyear Clinical Meeting. Elements of focus include professionalism; interviewing skills; developing curriculum vitae, portfolios, and personal websites; navigating PhORCAS; and writing letters of intent and thank you notes. Sessions are open to all pharmacy students, but targeted at fourth-year students. Students are provided with a list of area residents who are interested in serving as mentors and are encouraged to utilize them to review CVs, letters of intent, websites, and portfolios; provide mock interviews; evaluate where to interview, how to interact with residencies, and how to rank programs; and answer any questions that arise during the process. RIP-IT began in Fall 2013 and has run for three consecutive years. Results of a survey of 2015 participants will be analyzed in order to identify perceived benefits, program impact on residency placement, and opportunities for growth and improvement.

Retention through Resilience. Jane E. Wilson, *The University of Oklahoma*, Michael J. Smith, *The University of Oklahoma*, Clark Bishop, *The University of Oklahoma*, Sara Collins, *The University of Oklahoma*, Emily Ford, *The University of Oklahoma*, Michael Nguyen, *The University of Oklahoma*, Reagan Williams, *The University of Oklahoma*. **Objective:** Describe an initiative to bring awareness to building resiliency and the role resiliency plays in completing health professions programs. **Method:** Five students from OUHSC College of Pharmacy's (COP) Leadership Degree Option (LDO) were tasked with creating a publication devoted to resiliency as part of their APPE leadership rotation. LDO students emailed OUHSC faculty, students and COP alumni and requested they submit resiliency stories in the form of prose, art, and poems. LDO students interviewed Directors of Counseling and Financial Aid and the Chair of the Behavioral Intervention Team. They reviewed literature related to building resiliency and stress-reducing behaviors. After gathering information and receiving submissions, LDO students created *Crimson Cypress-Your Resiliency Resource*, a magazine with practical and motivational material related to resiliency. The LDO students wrote copy, designed graphics, and worked with campus PR for approval to publish. **Results:** LDO students presented their work to OUHSC Vice-Provost for Health Sciences and received funding to publish a copy for all students on campus. LDO students obtained permission from OUHSC Colleges to distribute publications to students during class time or through Colleges' Student Affairs' offices. They presented to COP's National Advisory Board (NAB). Members of NAB and HSC students indicated they were positively impacted by the publication. Several NAB members asked for copies to use for COP recruitment. **Implications:** *Crimson Cypress* was created by students, for students and can be a helpful resource in assisting students to build resiliency in order to stay engaged in the curriculum, thereby increasing retention.

Retention: Student Early Intervention Response Team. Laura A. Mandos, *University of the Sciences*, Mark Bullock, *University of the Sciences*. Retention: The Student Early Intervention Response Team (SEIRT) is an interdepartmental advisory group that reports to the Dean of Students. The team is made up of representatives from the Dean of Students Office, Student Health and Counseling (SHAC), the Office of Student Conduct, Student Life, Department of Academic Advising, Campus Security, Student Accommodations and the Academic Dean or designee from the four colleges at the University of the Sciences. The purpose of SEIRT is to assess and intervene on behalf of students who are struggling either academically, personally, or professionally. Additionally, the team may intervene when a student has been identified as "at risk" to ensure their safety and stability during a crisis, deploy appropriate campus supports, and monitor their progress post-intervention. SEIRT referrals are submitted for a wide variety of reasons. Although there is no comprehensive list of referral reasons, some common referral reasons include: A student who is missing classes frequently and not responding to emails A student who is suspected of having a problem with alcohol or drugs A student who has been acting inappropriately, exhibiting ongoing unprofessional behavior, or has been threatening in any way A student who has had a sudden change in behavior, quality of work, or mood A student with acute illness or chronic health issues A student who appears disengaged from class or appears ill-prepared for academic success A student with family issues or complicated bereavement Data will be presented looking at pharmacy student issues and outcomes for the last several years.

Sequential Remediation in a Pharmacotherapeutics Course Series. Mimi Mukherjee, *MCPHS University-Worcester/Manchester*, Abir Kanaan, *MCPHS University-Worcester/Manchester*, Dinesh Yogarathnam, *MCPHS University-Worcester/Manchester*, Cheryl R. Durand, *MCPHS University-Worcester/Manchester*, Kristine C. Willett, *MCPHS University-Worcester/Manchester*, Courtney I. Jarvis, *MCPHS University-Worcester/Manchester*, Jennifer L. Donovan, *MCPHS University-Worcester/Manchester*, Anna K. Morin, *MCPHS University-Worcester/Manchester*, Paul P. Belliveau, *MCPHS University-Worcester/Manchester*, Michael J. Malloy, *MCPHS University-Worcester/Manchester*. Accreditation standards from the Accreditation Council for Pharmacy Education require pharmacy programs to address remediation. Course repetition and competency exams are among remediation strategies that have been utilized within pharmacy curricula; however, there is a paucity of data on the effectiveness of these strategies. To address remediation in a 3-semester Pharmacotherapeutics course series, a unique two-stage remediation process was implemented. Initial remediation is proactive, involving pre-class assessments that evaluate understanding of foundational knowledge necessary for case-based class discussions. These assessments are administered using a learning management system. Students can use notes and have unlimited time and attempts when answering questions. Instructors review students' answers and numbers of attempts prior to class, and use the information to guide discussions. The secondary remediation stage is comprised of two components and occurs after each exam. The first component encourages students to attend exam review sessions to discuss and clarify answers. The second component involves an evaluation of each question's item analysis to identify concepts that are challenging. Instructors provide additional information on challenging concepts to improve learning, and then incorporate bonus remediation questions on these concepts on subsequent exams. Analysis of the data indicates that proactive remediation improved students' exam and overall course scores (mean 81.19% vs. 83.54% and mean 81.19% vs. 84.67% respectively), while secondary remediation had inconsistent impact on exam and course scores (mean 78.54% for 2013-2014 vs. 78.94% for 2014-2015). Pre-class assessments which guide in-class discussions seem to have a greater impact on student performance compared to secondary exam-based remediation.

Special Program in Pharmacy. Philip M. Hritcko, *University of Connecticut*. The purpose of this program is to nurture a diverse group of highly motivated students to succeed in our 6 year curriculum with more flexibility and enrichment in their undergraduate and professional studies. This 6-year program links 2-years of prerequisite and general education coursework with 4-years of professional pharmacy education resulting in two degrees: a BS Pharmacy Studies and Pharm. D. The UConn School of Pharmacy has created exciting opportunities for talented students to explore diverse undergraduate interests, while preparing them for the professional school experience in pharmacy. Admission to this select program is limited with the expectation that these student will be accepted into the School of Pharmacy if academic standards are maintained and contingencies met. All applicants are considered for participation in the Honors Program as well. With unique flexibility, students can select powerful combinations of courses and experiences that will further their professional advancement. While working on a selected pre-professional tracks or undergraduate programs, the student will be linked with the School of Pharmacy through special seminars, research opportunities, and health-profession events, all aimed at supporting the achievement of curricular and career goals. This unique program of mentoring will further enrich the undergraduate experience by providing educational

opportunities which will strengthen the student's preparation for professional school. To apply, the student must be entering UConn as a first-semester freshman. Selected freshmen must have demonstrated exceptional performance in academics, including advanced preparation in mathematics and laboratory sciences, or other fields. Students must take either the SAT or ACT exam.

Student Involvement in Pharmacy Profession Promotion and Recruitment: The University of Michigan Pharmacy Student Ambassador Initiative. Holly Reed, Mark S. Nelson, *University of Michigan*, Nancy A. Mason, *University of Michigan*. The Pharmacy Student Ambassador (PSA) program at the University of Michigan College of Pharmacy (UM COP) was developed to enhance recruitment of potential student candidates and to encourage leadership and active involvement of current pharmacy students in the admissions process. The mission of PSA is to promote the profession of pharmacy and the UM COP program to potential candidates and to incorporate student assessment of potential candidates into the admissions decision-making process. During the 2015-2016 academic year, 173 students (nearly 70% of the P1-P3 classes) participated in PSA, with 34 holding elected leadership positions. Our admissions approach has grown to include student interviewers in every interview to provide a unique assessment of a candidate's fit and likelihood of success in our program and to also increase opportunities for interviewees to interact with current students. Students also send email welcome messages and go to lunch with candidates. Additionally, PSA pre-pharmacy organization liaisons maintain e-mail contact and coordinate events and panels at seven Michigan and two California undergraduate institutions. Outreach tools include a Pre-Pharmacy Student Network hosted through Facebook, a student life blog, and quarterly newsletters. Pharmacy profession education is presented through current issue posts on the Pre-Pharmacy Student Network, pharmacy practice spotlights in our newsletters and an interdisciplinary case study event held on the UM campus. Through the use of early outreach and student involvement in admissions, PSA serves as a unique resource for prospective students prior to, during, and after acceptance into the program.

Success of a Pre-Residency Track in a Multi-campus College of Pharmacy. Whitney Maxwell, *South Carolina College of Pharmacy*, LeAnn B. Norris, *South Carolina College of Pharmacy*, Cathy L. Worrall, *South Carolina College of Pharmacy*, Amy D. Grant, *South Carolina College of Pharmacy*, Kelly R. Ragucci, *South Carolina College of Pharmacy*, Sandra S. Garner, *South Carolina College of Pharmacy*, Randall C. Rowen, *South Carolina College of Pharmacy*, Philip D. Hall, *South Carolina College of Pharmacy*, P. Brandon Bookstaver, *South Carolina College of Pharmacy*. **Background:** Over 25% of pharmacy graduates compete for placement in post-graduate training programs. South Carolina College of Pharmacy (SCCP) offers a pre-residency track that combines faculty mentoring, didactic seminars, scholarship and leadership to provide students with a roadmap for successfully obtaining a residency or fellowship position. We report the outcomes of the track from 2007–2015. **Results:** The track is optional for rising second or third year SCCP students and includes: (1) targeted electives/rotations; (2) participation in residency preparation seminars; (3) curriculum vitae and etiquette workshops; (4) participation in regional and/or national organizations; (5) leadership at local/regional/national level; (6) attendance at state/local residency showcase; (7) completion of an independent study resulting in abstract at regional/national meeting; and (8) faculty career mentorship. From 2007–2009, approximately 17% of graduating SCCP students pursued residency training,

increasing to 24% from 2013–2015. Although not all residency-bound SCCP students completed the track, of the 323 SCCP students pursuing post-graduate training, the placement rate was 79.5% (69%–88%), with 6% (20) completing a community residency and 1% (4) completing an industry fellowship. Approximately 50% of graduates pursuing a PGY1 also completed a PGY2 and/or fellowship, primarily in critical care (19%), oncology (17%) or infectious diseases (15%). Students reported the highest satisfaction in mentorship related to CV preparation, navigating residency showcase and program selection. **Conclusion:** A formal pre-residency track at a multi-campus college of pharmacy with strong components of faculty mentorship, leadership and scholarship requirements prepares students for successful placement in post-graduate training positions.

Summer Academic Enrichment Program (SAEP): An Interprofessional Pipeline Initiative for Pre-Pharmacy Students. Rollin L. Ballentine, *Virginia Commonwealth University*, Rollin L. Ballentine, *Virginia Commonwealth University*, Thomas P. Reinders, *Virginia Commonwealth University*, Thomas P. Reinders, *Virginia Commonwealth University*. The VCU SAEP program is an intensive six week summer interprofessional program designed to assist students in their preparation and application for a professional education program in dentistry, medicine, pharmacy, or physical therapy. This program simulates the stress, time commitment, organization skills and structure of a professional education. Priority is given to economically, educationally, or socially disadvantaged students. The academic instruction includes courses in graduate level physiology, pharmacology, and anatomy facilitated by medical school faculty. Students' academic performance is evaluated through grades on quizzes and exams, but no academic credit is awarded. Additionally, students are immersed in instructional activities designed to enhance their learning experience in their specific discipline (including PCAT preparation), as well as time exploring other health professions' disciplines participating in the program. Students also participate in a volunteer experience at a local church providing diabetic foot care and health screenings to Richmond's homeless population. Student development activities involve assistance with the application process through individual coaching sessions and developing oral communication and critical thinking skills through public speaking, book/journal discussions, and mock interview sessions. At the end of the experience all participants receive a comprehensive "Committee Evaluation" which may be used as a reference letter. The program has been offered for 4 consecutive summers with a total of 40 participants. To date, all 33 students that have applied to a pharmacy school have been accepted and matriculated, with 64% of accepted students choosing to attend VCU. Further results of the program will be presented.

Talent Acquisition: Recruiting and Mentoring Students for Professional Success. Susan M. Meyer, *University of Pittsburgh*. The PittPharmacy "Talent Team" employs numerous strategies to attract the best and brightest students. Our goal is to enlighten high school students, families, and high school counselors about pharmacy careers. Strategies used include: Leveraging information technology and social media ● Direct telephone contact from PharmD students ● High School Counselors Information Breakfast, video to increase awareness of pharmacy career paths, outreach visits to local high schools. The overall goal of these strategies is to build a continuous relationship pipeline, from high school student to pharmacist, resulting in the creation of leaders in the profession. PittPharmacy sustains a multi-faceted approach to career mentoring that is foundational to achievement of the School's goals of personalizing education and helping students get to expert faster. Portfolio Reviews: The student portfolio serves as

the focus for individual student conversations with a faculty member or practitioner, which occur at least once per term, about academic progress and deliberately planning for professional success. Faculty-mentored Student Affinity Groups: Faculty members mentor small groups of students in areas of concentration (Research; Business Administration; Global Health; Pediatrics; Community Leadership, Innovation, and Practice; Pharmacotherapy Scholars) and other student affinity groups (Innovation Lab, the PittPharmacy Talent Team, and Careers in Academia). Career Learning and Advising Groups: Six students from each class level are assigned to a faculty-mentored Career Learning and Advising Group. Each faculty mentor leads group conversations on setting goals, exploring strategies to personalize education, and career planning. Peer mentoring is also encouraged.

Targeting Students of All Ages to Increase Awareness of the Pharmacy Profession through Multiple Programs. Tiffany L. Kessler, *Southwestern Oklahoma State University*, Erin D. Callen, *Southwestern Oklahoma State University*, Krista G. Brooks, *Southwestern Oklahoma State University*, Shelly Stockton, *Southwestern Oklahoma State University*, Lisa A. Appeddu, *Southwestern Oklahoma State University*, Stephen Drinnon, Lyanna Schultz, Julia Hendrickson. **Background:** Due to declining numbers of applicants and the increasing number of schools, Southwestern Oklahoma State University College of Pharmacy (SWCOP) has implemented numerous programs to increase early exposure to the profession. **Objective:** Describe the implementation of multiple educational programs including PharmCORP, Eagle Medical Trainees, Tech Trek, and Girl Scouts STEM Day. **Methods:** All students participated in multiple hands-on activities in different pharmacy settings. Pharmacy Career Opportunity Recruitment Project (PharmCORP), a national program developed by Kappa Epsilon (KE), targets high school students to educate them regarding careers in pharmacy. SWCOP's KE chapter organized the event with additional assistance from pharmacy students and faculty. The 8th graders in the Eagle Medical Trainees program gained experiences in a variety of health care related careers, including pharmacy. Admission to the program involved an application and was highly competitive. Tech Trek selected 7th grade girls to spend one week on campus to participate in Science, Technology, Engineering, and Mathematics (STEM) activities. Campers were selected by members of the local American Association of University Women chapter which included a pharmacy faculty member. Several local Girl Scouts troops attended Girls Scout STEM day, a one day event on campus. **Results:** These programs impacted a total of 159 students (PharmCORP 17, Tech Teck 44, Girls Scouts 84, and Eagle Medical Trainees 14). Participant feedback was overwhelmingly positive. **Implications:** We believe these are valuable programs that increase awareness of the pharmacy profession, and we will continue to ask faculty and pharmacy students to participate.

Targeting the Pharmacy Pipeline through Strategic Communication. David D. Allen, *The University of Mississippi*, Chelsea W. Bennett, *The University of Mississippi*, David F. Gregory, *The University of Mississippi*, Leigh Ann Ross, *The University of Mississippi*. Targeting the Pharmacy Pipeline through Strategic Communication Background As national demand for pharmacy applicants is fueling increased competition among colleges and schools of pharmacy, our School is casting aside our "wide net" methods of recruitment and instead incorporating a targeted communications plan tailored to recruit individuals who may be a best fit for our program. **Purpose:** A cost-benefit analysis of former recruitment practices indicated a targeted communications approach could minimize impact on financial and human resources while improving efficiency in recruiting qualified

applicants. **Methods:** Potential applicant pools for Early Entry and Professional students are developed through test score purchases as well as through student interactions at recruiting events and through identification by counselors, advisors, and faculty from other institutions and by current students and alumni. Pharmacy Ambassadors assist in communications efforts related to events, writing campaigns, online chats, phone blitzes, and follow-up communications. Current students assist in writing former counselors and teachers to promote the profession and our program. Program-specific, electronic newsletters are sent every six weeks to various constituencies, as well as holiday cards and counselors packets. Social media use is maximized in multiple avenues, including postings to "The Dose," a School-specific blog. **Conclusion and Next Steps:** We continue to monitor applications as we incorporate more "in-house" recruitment through communications efforts and less face-to-face recruitment and travel. We will also provide a one-day training workshop for University admission officers to include hands-on activities to promote the profession and to highlight various aspects of practice.

To Infinity and Beyond: Looking Beyond Graduation. Kim M. Jones, *Union University*, Mark A. Stephens, *Union University*, Sheila Mitchell, *Union University*. The faculty and administration of the Union University School of Pharmacy recognize that student pharmacists need development beyond the didactic and experiential curriculum. Professional career development begins as early as the first-year, through a variety of elective and mandatory co-curricular experiences, and extends through the fourth professional year. The Offices of Student Services and Experiential Education are primarily responsible for the development and implementation of events that ensure our student pharmacists are well-equipped for securing post-graduate career opportunities. Students are exposed to a variety of internal and external stakeholders who emphasize the importance of preparing today and planning for tomorrow, even when tomorrow is four years away. Career mentoring opportunities to be described in this poster include the following: CV workshops and review, residency informational sessions, mock residency interviews, job interview preparatory, and release time from APPEs for attendance at professional meetings that impact career development (e.g., ACCP, ASHP, TSHP). Assessment of post-graduate placement occurs via the AACP Graduate Survey and through informal tracking coordinated by our Director of Pharmacy Outreach.

UCSF School of Pharmacy Interprofessional Health Post-Baccalaureate Certificate Program. Sharon L. Youmans, *University of California, San Francisco*, Joel W. Gonzales, *University of California, San Francisco*, Leslie Mach, *University of California, San Francisco*, Cynthia Watchmaker, *University of California, San Francisco*. **Background/Objectives:** The Interprofessional Health Post-Baccalaureate Certificate program is a yearlong academic experience designed for students who have completed undergraduate coursework but need a stronger academic foundation to be competitive in applying to pharmacy school. We are especially interested in students from disadvantaged backgrounds, underserved communities, and groups historically underrepresented in pharmacy. **Methods:** The selection process includes a submission of a program application, academic transcripts, and a resume. After an initial review students are invited to interview and if successful are admitted to the program. The key components of the program include 1) two semesters of upper division science coursework pertinent to pharmacy, 2) personalized support in preparing pharmacy school applications, 3) workshops focused on academic and professional development, 4) seminars on topics in health care and the pharmacy profession, and 5) regular meetings with School

of Pharmacy faculty and staff to monitor progress. The workshops and seminars include pre-dental and pre-medical students. All students complete an interprofessional Continuous Quality Improvement Project. **Results:** From August 2010 – May 2015, 18 students have completed the program. The acceptance rate of our students into a pharmacy program is 92%, with 85% accepted into UCSF School of Pharmacy. **Implications:** Our program has been transformative for our students and has assisted the school in achieving its recruitment and diversity goals.

Using a Pre-Admission Program to Recruit High Achieving Students Right Out of High School. Daniel J. Hansen, *South Dakota State University*, Surachat Ngorsuraches, *South Dakota State University*, Dennis D. Hedge, *South Dakota State University*. **Objective:** Compare the number of freshmen admitted to the university into pharmacy and evaluate their success before and after implementation of a pre-admission program. **Methods:** A pharmacy pre-admission program was implemented in 2013. Data from the 2010 to 2014 class of incoming freshmen pre-pharmacy students with an ACT ≥ 27 was initially used to measure the number of students who enrolled in the University during the fall semester of their freshmen year. Data from the 2010, 2012, and 2013 classes was used to compare students in different categories considered critical for continuation or acceptance in the pre-admission program, and their level of success in the first semester of the professional program. This data included ACT composite score, high school GPA and class rank, pre-pharmacy GPA, and first semester pharmacy school GPA. Following collection of data in these categories, the means of the data were calculated and interpreted to determine what, if any, differences arose among the three groups of students. **Results:** The number of freshmen pre-pharmacy students admitted to the University with an ACT ≥ 27 increased from 56 in 2010 to 72 in 2014. There was no statistically significant difference in any category evaluated (p -values > 0.05) when comparing those students admitted before the pre-admission program to those admitted after implementation. **Implications:** Data shows the pre-admission program may be attracting more high achieving students to the university. The quality of the students admitted to the pre-admission program and their success is consistent with those admitted prior to program implementation.

Using the CAPE Outcomes in the Admissions Interview. Alexandra Perez, *Nova Southeastern University*, Barry A. Bleidt, *Nova Southeastern University*, Jeffrey G. Jurkas, *Nova Southeastern University*. To take a holistic approach, the Admissions Committee at the Nova Southeastern University College of Pharmacy decided to use the 2013 Center for the Advancement of Pharmacy Education (CAPE) outcomes as a framework in the admissions interview. The 15 CAPE outcomes describe the knowledge, skills, and attitudes that students should have upon graduation and 13 were chosen for the admissions interview: caregiver, manager, promoter, problem solver, educator, advocate, collaborator, includer, communicator, self-aware, leader, innovator, and professional. These outcomes were called 'roles' in our admissions process. During the interview, open-ended questions were created to be used by two faculty interviewers to ascertain whether the interviewee had experienced specific roles during their undergraduate years and the attitude developed as they played the role. The same experience could be used to assess more than one role (e.g., pharmacy technician experience used to assess leader, manager, and collaborator roles). The approach taken by the interviewee in each role was rated by the individual interviewers as being either poor, marginal, adequate, good, or superior. Once the interviewee left the room, the interviewers were encouraged to discuss their assessments, however,

each provided an independent evaluation to the Admissions Committee. At least 9 roles should be rated as adequate, good or superior to be deemed acceptable. Along with traditional admissions metrics, total interview assessments including the roles, pharmacy profession knowledge and overall interview performance were used to determine admission status in the program. A qualitative and quantitative evaluation of this new interview format will be conducted.

“Building the Pharmacy Pipeline:” An Early Assurance Program and Relationships to Student Leadership and Academic Achievement. Robert L. Chapman, *Midwestern University/Downers Grove*, Margaret Felczak, *Midwestern University/Downers Grove*, Jennifer L. Mazan, *Midwestern University/Downers Grove*, Milena McLaughlin, *Midwestern University/Downers Grove*, Jeffrey Wieczorkiewicz, *Midwestern University/Downers Grove*, Paula L. Giometti, *Midwestern University/Downers Grove*. The Dual Acceptance Program (DAP) is an early assurance program for select high school seniors. The program provides students who are motivated to become pharmacists a clear path to achieving their career goal, directly out of high school. Students admitted to the DAP must complete their prerequisite requirements during the first two years at one of eleven affiliated colleges or universities, and then transition into MWUCCP to begin a four-year Doctor of Pharmacy program. Our objective was to determine if this highly motivated group of DAP students were more likely to assume leadership positions and perform at a higher level academically than students who enter the program by the traditional pathway. We reviewed the lists of CCP students who assumed leadership roles in student associations and student governance between 2011 and 2015, cross checked with the lists of DAP Admissions in order to compare the percent of student leaders admitted in the DAP versus those admitted by the regular admissions process. We also reviewed the CCP Deans Lists from 2011 to 2015, cross checked with the lists of DAP Admissions in order to compare the percent of Deans List honorees admitted in the DAP versus those admitted by the regular admissions process. Our results shed light on the criteria used for admissions in an early assurance program for select high school seniors who maintain high academic achievement as predictors of engagement in student leadership roles and academic achievement in the Pharm.D. program.

“PILS”: A Peer-to-Peer Mentoring Program to Improve Academic Progression. Obi Okafor, *Howard University*, Chijioko Onejeme, Daphne B. Bernard, *Howard University*, Tamara Foreman McCants, *Howard University*, Marlon Prince, *Howard University*, Terry Sconion Morris, *Howard University*. A dilemma exists in the field of pharmacy education related to the progression of its students within a fixed time frame all the while being professionally competent. Academic policies typically note that failure results in academic dismissal or delayed graduation. Often times, the first year of pharmacy school proves to be the most challenging due to difficulties adjusting to the volume of information as well as the demands of a professional program. The Pharmacy Initiative Leaders (PILs) program was created in 2013 as a collaboration between the College of Pharmacy Office of Student Affairs and student leaders. PILs utilizes the collective experiences of upperclassmen to ease the transition of incoming students to help them stay on track with passing their courses and to reduce the rate of remediation. PILs is voluntary and is facilitated by a coordinator who matches incoming students' background and career goals with rising second and third-year students. The PILs mentors are required to check-in with their “PILs” three times a semester and render services such as CV editing, tutoring and other interpersonal and professional services. The PILs pairing establishes a familiarity between mentor/mentee which allows for honest communication to identify and prevent academic pitfalls.